Piper's '60s **workhorse**

It's dependable, robust, and can take full fuel with all six seats occupied. A landmark of the golden era of GA, the Aztec is a surprisingly pleasant and easy aircraft to fly

Words: Bob Davy **Photos:** Keith Wilson

The Aztec, or 'Aztruck' as its affectionately known, is Piper's most respected twin of all. Specifically, the PA-23-250 Aztec is a true six-seater which was derived from the PA-23 Apache but with larger engines and a bigger tailplane, an all-moving stabilator replacing the Apache's conventional fixed surface/elevators. The tube frame fuselage and standard Piper wing was retained.

In the world of literature, the sequel is often more successful than the first book and so it was with this aircraft. With 2 x 250hp replacing 2 x 160hp, the Aztec addressed all of the underpowered Apache's shortcomings; speed, payload and more. In fact, the Aztec was so successful that Piper quickly considered building a 'Super Aztec' with eight-cylinder IO-570 engines producing 390hp per side, until they turned to a completely new design, the PA-31 Navajo (featured in *Pilot,* March 2019). Aztec sales were brisk from the start and the Apache production line was closed just four years later.

What is so special about the Aztec? Like a London bus, a Land Rover or a Willys Jeep, it's an entirely honest design that (cliché alert) does what it says on the tin. It has six seats that can all be occupied at the same time, it has controls that work, windows that you can see out of and respectable speed and range—even when heavily loaded. The Aztec isn't the lightest or fastest piston twin but it isn't designed to be. Like a trusted friend and a Toyota Land Cruiser, the Aztec is reliable and dependable.

This 1972 test example is an 'E' model—Piper stopped at F—and is, ironically painted in 'Kermit the frog green', a bit like the second prototype, back in 1958. Incidentally that prototype was sold to Piper's agent in England, CSE Aviation in the early '60s, flew here as G-ASND and appears to be still in existence in the USA.

The aircraft I'm flying today is a 'one owner from new' example, owned and operated all these years by the lead singer of '70s band The Rubettes ('Sugar Baby Love' was their biggest hit). Given its vintage, it should have a longer nose than the original, and officially be a foot shorter than the F—except that this one appears to have been retrofitted with an F nose after an accident with the nosewheel.

The E shares with all other models the Lycoming IO-540 or TIO-540 engines (the extra 'T' in the prefix standing for turbocharged, of course). Only the F model had any significant aerodynamic changes, specifically a redesigned stabiliser which addressed perceived shortcomings in pitch control, albeit robbing a significant number of knots from the cruise speed (more on that later). 'Kermit' had turbo engines originally, long since replaced with more rugged and reliable non-turbo examples.

A walk around shows that Kermit is in very good condition for the year, with no obvious corrosion and the paint in good order, due in part to it recently being touched/resprayed where necessary. You can see part of the tube frame fuselage structure behind the front screen.

I am drawn to the wings: at 37ft in span, they are beefy in section, having the US version of the good old Clark Y aerofoil, as on everything else Piper designed from the 1930s Cub until the laminar-flow Comanche. This means high lift and the ability to haul a big load—2,158lb in fact - →

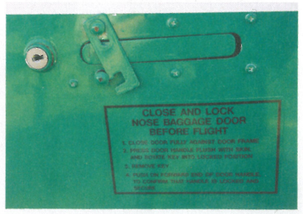
It's an honest design... that does what it says on the tin

ABOVE: **there's plenty of space for baggage, sensibly distributed between space in the nose...**
BELOW: **... and the neatly trimmed compartment behind the cabin (note the Y-shaped cluster of frame tubes)**
RIGHT: **in the Piper tradition and interest of structural integrity, there's just the one cabin door**

and, with full tanks (137 gallons or 519 litres of usable fuel) that leaves 1,254lb for the passengers and baggage. In other words, you can take full fuel *and* six adults.

Baggage loading is catered for by forward and rear hatches. The forward one has an extra safety catch—which drops over the opening lever—after a few accidentally came open in flight, taking out the starboard prop and engine. Range with reserves is between 820 and 1,100nm depending on the power setting.

The wings and tail are also fitted with de-icing boots, originally a non-Piper retrofit option but eventually available at the factory, such was their popularity. Cruise speed is advertised as 210mph, just over 180kt—but that's at some



Safety latch added after incidences of the nose door springing open in flight

humongous altitude rarely achievable in Europe when VFR, so don't expect any more than 145kt to show on the ASI when operating down low.

Travelling back in time

I climb up on the starboard wing and open the single cockpit door. At this moment there should be a gentle whirring sound as my

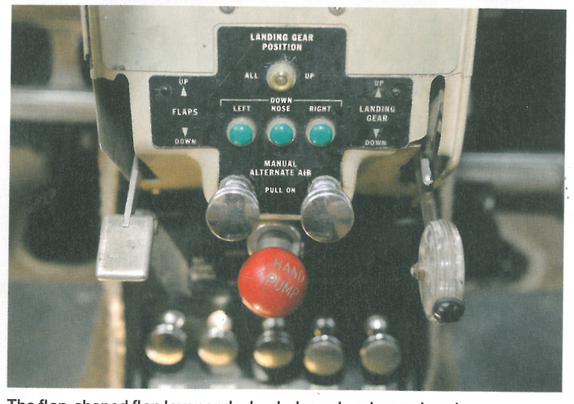
wrist watch winds itself back forty-eight years. This cockpit is a time capsule, seemingly unchanged since new, apart from the 8.33 radio and Mode S transponder in the centre stack. With ghostly echoes of 'Sugar Baby Love' swirling around in my head, I climb in and drift backwards in time to 1972. What was the state of the art, back then? The answer is surprisingly ergonomic. It's a functional and business-like cockpit, with pretty much everything where you would expect it to be at an age when flat screens were only being imagined by Stanley Kubrick in *2001: A Space Odyssey* (in case you didn't know, that's where everyone gets ideas from).

With two engines to control and a full IFR fit (it's got boots, remember) Piper ran out of room with just the main panel. Hence the mags and start toggle switch on the left cockpit wall, and fuel tank selectors and cross feeds between the front seats on their own console, with the cowl flap levers at the front. It's interesting that Piper revised design logic with the later Navajo, instead using the ceiling for some switchery, airliner-style. In an Aztec only the coaxial rudder trim knob and elevator trim crank are mounted in the ceiling, like an early Cherokee. The elevator trim crank works in the correct sense but the rudder knob is confusing as hell.

The seats are large and comfortable. The Aztec is certainly a true six-seater, albeit the rearmost seats have slightly →

ABOVE: **'Juliet Whisky's panel remains almost entirely as it was in 1972, excellent original features include ergonomically-shaped throttle, propeller pitch and mixture levers**
LEFT: **tucked between the seats, the fuel tank and cross feed selectors, and (top of image) cowl flap controls**
BELOW: **overhead elevator trim crank/ rudder trim knob and lighting controls**

Starter and mag switches are located on the port fuselage wall



The flap-shaped flap lever and wheel-shaped undercarriage lever

reduced elbow- and headroom, being located at the start of the taper of the rear fuselage.

Engine start is completely straightforward for a fuel-injected Lycoming (earlier models had carburettors). First select fuel on, operating the levers between the seats—airline pilot and co-owner Tim leaves the fuel switched off and expects you to have the logical approach and professionalism to turn them on before start. Best to start up on the thirty-six gallon outer tanks, switch to the inner tanks for run-up, take off and climb, then go back to the outers for cruise. Switch on the battery, mixture lever forward on the centre console and hit the fuel pump until the fuel pressure indication registers. Then it's throttle back to an inch open, mixture *cut off*, mags *on* and starter *on* until the engine fires and the mixture goes back to rich. Repeat for engine number two.

After starting up it's a very simple procedure to bring everything on line. There is just one hydraulic pump—on the left engine—and back up hydraulics are provided by 'armstrong': a mechanical lever with a big red knob which telescopes out from under the centre panel, between the gear and flap levers. Select the service required and then start pumping!

With a little temperature showing on the oil it's time to taxi. Today it's just Tim and me plus half tanks, so Kermit doesn't require much throttle to get going. Steering load on the pedals is surprisingly light—some lighter twins feel heavier—and turns can be tightened with asymmetric thrust, if required. The run up and pre-takeoff vital actions are also straightforward, but I hold the feather check on the port side too long and end up stopping the engine. And then we can't get it restarted. Tim is *not* happy. Sorry! We taxi back on one engine, have a cup of tea and wait for it to cool down.


Seats are large and comfortable, albeit with restricted elbow room in the back row

PAID OFF, remember!

Half an hour later we are lining up on the grass at White Waltham. I take a moment to remember what to do 'if and when' in a light twin. What we *won't* be doing is to try and climb out on one engine if the other one fails before rotation. It's not an airliner and doesn't have the performance. If, however we get away from the ground to a reasonable height we can consider continuing on one—providing everything can be put in the right place fairly promptly. I remember the acronym PAID OFF:

- **P**revent yaw with rudder
- **A**ttain blue line speed (101mph, best single-engine speed)
- **I**dentify failed engine
- **D**ecide what to do. If we continue on single engine:
- **O**pen up live engine.
- **F**eather dead engine—with throttle closed, prop to feather and mixture to cut off.
- **F**uel—consider cross feed if extended flight is required.

There's more but those are the important items. Even if we get it right we'll only get a climb rate of a couple of hundred feet per minute.

With Tim looking on, I open the throttles to about half power to check both engines are winding up, then stable, to prevent a swing. Then I go to full throttle and check two sets of Ts and Ps as we accelerate briskly. Flying a twin is always an occasion and the Aztec doesn't disappoint: we've a total of 500hp whisking us down the runway. At 80mph I start to rotate—the elevator is medium heavy but the nose comes up without delay. We leave the runway and I reach down, swipe away the safety latch with my thumb and raise the gear. It comes up in three seconds and then the lever springs back to →

A buyer's market for twins

Do you want to buy an Aztec? With production ending in 1981, the newest available will be nearly forty years old, and the oldest over sixty. Prices vary widely, depending on engine, prop life and general condition. However, prices for used twins have never been lower and Aztecs are no different. Some are for sale for as little as £35,000. The aircraft used for this flight test is currently for sale for £65,000 (see 'Aircraft Sales' in the classified ad pages).

The aircraft is easy to fly – more so than other Piper twins...

neutral, one white light above replacing three greens. The ASI pegs at nearly 2,000fpm - although we would see 500fpm less at maximum weight.

The ailerons feel light and strong, the engine mass on the wings resulting in a much higher roll inertia—called hysteresis—than single engine pilots normally experience. This usually results in a bit of see-sawing in roll until they settle down. Overall, though, the controls have a very good feel, fantastic actually—I know when an aircraft has great flying controls if afterwards it's difficult to write down anything specific about them.

I pull the power back to 25 'square'—that's 25in and 2,500rpm. We level off at 2,000ft and I let the speed build up, cancelling the out-of-trim forces with the electric trimmer on the column. We are motoring along now, with the ASI needle at 160mph. The controls remain harmonised and the stabilator feels completely normal. That is, until we home in on the camera ship. After fifteen minutes of orbits, breaks and position changes I can feel a few beads of sweat rolling down my neck. I wonder why I seem to be working so hard and then finally notice that I seem to be constantly trimming and/or holding out-of-trim forces in pitch: the pitch trim is changing with every speed change (to be expected) but also with power changes (not necessarily...). It means that doing the pictures is the hardest part of the flight, and that includes single engine work!

A tale in the tail

If there's any criticism of the Aztec it's going to be with the tail. In fact, the prototype crashed during flutter tests in 1958, taking test pilot Robert Piggott with it. Piper engineers re-designed the all-flying tailplane with mass balances and anti-servo tabs, and strengthened the tail structure. That solved the problem, but it still wasn't perfect and Piper eventually redesigned and enlarged the tail for the F model. This gave increased stability in pitch but robbed ten mph from the cruise speed. Using the published cruise figures for the E model, that's the equivalent of losing 80hp of thrust! Give me the smaller tail any day.

In normal flight the pitch/power change relationship is absolutely not a problem and in fact the aircraft is easy to fly—more so than other Piper twins like the Twin Comanche, Seneca and Navajo. Tim also flies a Piper Arrow but says that the Aztec is even easier than that. It certainly makes an excellent instrument platform and IFR flying is a doddle, even on one engine once you have trimmed out the rudder force! The loyal following for this aircraft is not without reason. The

biggest drawback of operating an Aztec is its fuel consumption: 27gph at seventy per cent power is normal, but Tim gets it down to 22gph by flying a bit slower.

Little power on final

It's time to take Kermit home. I point the nose down and let the speed build up to Vne just to experience flight at the top end of the envelope while getting down to 1,250ft for an overhead join at White Waltham. The aircraft remains super stable at high speed and with it level the speed washes off at a manageable rate as we join the circuit.

At the beginning of the downwind leg I am below 160mph and select half flap, which gives a big pitch up. I was expecting it and catch it easily then trim out the force. Gear down at 150mph in four seconds, then full flap (not so much pitch up this time), turning base at 120mph. On final I come back to 100mph, short final at ninety, over the threshold at eighty—the stall with flap is 65mph, so this represents just north of 1.2 x Vs. On final I am surprised how little power I need to hold the descent rate and initially I fly too fast until I nail it. Conversely I flare about three feet too high and the speed gets too low before we touch down. I feel a little buffet in the nanosecond before we land. It's a 6/10 landing, so I stand the throttles up while Tim retracts the flaps, and then do another circuit.

This time it's a bit better and the landing normal, but the approach a little too steep and so with not as much power on as would be ideal in case I'd wanted to go around and the engines didn't pick up symmetrically. Oh well, at least the landing is half decent. It's a 7.5/10 grade, maybe this time but the truth is this aircraft is a delightful doddle to fly.

Later on in the month I had the opportunity to do a longer flight as my friend took it on a trip to Vienna and picked me up on the way home after I had ferried an Su-29 from Spain to Germany. It was good to see Kermit again and I looked forward to taking the controls, but within minutes I fell asleep and only woke up on the approach! That usually only happens when I'm in the back of an airliner and is a measure of how relaxing the Aztec is, both to fly and travel in.

PIPER PA-23-250 AZTEC E

Dimensions

Length	9.52m
Height	3.15m
Wing span	11.33m

Weights and loadings

Empty weight	1,380kg
Max AUW	2,359kg
Useful load	979kg
Power loading	6.34kg/kW (10.4 lb/hp)
Fuel capacity	545 lit
Baggage capacity	113kg

Performance

Vne	188kt
Cruise	182kt
Stall full flap	56kt
Takeoff over 50ft	381m
Landing over 50ft	381m
Climb rate	1,490fpm
Climb rate (single engine)	240fpm
Ceiling	21,000ft

Engines

2 x Lycoming IO-540-C4B5 producing 250hp (186kW)

Propellers

Hartzell metal two-blade constant speed

Manufacturer

Piper Aircraft Corporation