When tails wore wheels and gas was cheap, a good airplane didn't have to be fast or complex. Piper's success with the Cherokee 180 proves that it still doesn't.

BY MARK M. LACAGNINA

The first rays of sun ignite a soft, phosphorescent glow within the fog bank creeping silently over the airport. For me, the incredible scene is a special treat at the end of a long flight through the cold morning sky.

The cockpit of the Piper Cherokee 180 is beginning to fit like a comfortable, old shoe, and I wish I could wear it a bit longer. But the fog has receded enough to allow a clear approach to the runway, and there no longer is any excuse to loiter above the airport.

I relish the last few moments of this

flight, enjoying the light and well-harmonized controls as I concentrate on trying to make a perfect approach and landing. My efforts are rewarded when the tires touch the pavement with a satisfying chorus of squeaks.

Reluctantly, I park and shut down the Cherokee, and pause to reflect rather, to chide myself—as the gyros hum themselves to sleep. Three days ago, I had approached the airplane as an antagonist. I had a tight schedule to meet, long distances to fly and a miserable cold front with which to contend. I had scheduled a turbosupercharged Business Machine for the trip, and it had picked an unfortunate time to come up for a 100-hour inspection. The Cherokee 180, the fixed-base operator said, was the best he could do.

A tight schedule, long distances and bad weather. I was dismayed by the prospect of having to face all of that in a—a Cherokee.

Now, listening to the Cherokee's gyros wind down, I realize that, once again, I had succumbed to the Fixed-Is-For-Sissies Code of Hairy-Chested Flying. continued The fixed-gear, fixed-pitch Cherokee had met the tight schedule and handled the turbulence and approaches to minimums with aplomb. What's more, the airplane had given me several hours of pure enjoyment.

I spot the Business Bird parked across the ramp, fresh from its vacation in the maintenance shop. I can just make out the luxurious crushed velour of its interior and the digital everything in its crammed instrument panel. Its three-blade prop is thrust defiantly, insolently in the air. No doubt a good and capable airplane, but the Business Bird appears to me right now to be a bit, well, overdone.

"Who needs you, turkey?" I mutter at the Business Bird.

I think I hear the Cherokee chuckle. Nah, must have been the gyros.

Production numbers—the report cards of the general aviation aircraft industry —show that the Cherokee 180 is one of the most popular and successful models developed by Piper Aircraft.

The airplane, now called the Archer by Piper and some identity-conscious owners, is entering its twenty-first year of production. So far, approximately 9,500 Cherokee 180s—and Challengers, Archers and Archer IIs—have flown off the assembly lines at Vero Beach, Florida.

The Cherokee 180 has been the bestseller in the 180-horsepower, four-seat, fixed-gear market. It has withstood competition from the Cessna Cardinal and Hawk XP. It even has survived a strong challenge by the faster, sleeker but half-heartedly marketed Grumman/Gulfstream Tiger. And the airplane consistently has outsold—by as much as four to one—the well-built but slower and more expensive Beech Musketeer/Sundowner.

There really isn't anything about the Cherokee 180 that could be described as exceptional. Rather, the key to the airplane's popularity lies in its respectable all-around performance, utility, simple and reliable construction and reasonable cost of ownership.

Many pilots consider the Cherokee 180 to be the best of the Cherokee tribe. Indeed, it was the solution to Piper Aircraft's long quest to develop an all-metal, low-wing replacement for the Tri-Pacer.

The original Cherokee had a 150horsepower engine. It was designed by John Thorp, Fred Weick and Karl Ber-

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Each of the fat, constant-chord "Hershey bar" wings carries a 25-gallon fuel tank that is built into the leading edge. The Cherokee's systems are an exercise in simplicity: manually extendible wing flaps; push/pull engine controls; a single brake handle; a Left, Right, Off fuel selector; manual trim controls (a knob beneath the panel for rudder trim, a crank on the roof for stabilator trim); and fat, 6.00×6 tires on all three wheels.

The Cherokee 150 was welcomed with enthusiasm by the general aviation community, but the airplane fell somewhat short of Piper's goal for a true, four-place family airplane. The company raised the horsepower to 160, but the result remained a "two plus two" airplane, meaning that if the pilot wanted to fill all four seats, he could not fill the fuel tanks as well.

Piper found the solution to the problem by equipping the Cherokee with a 180-horsepower, Lycoming O-360-A3A engine. The Model 180B joined





the Cherokee tribe in 1963. (There is no A-model 180.) It has a useful load of 1,175 pounds, compared with 945 pounds for the 150 and 950 for the 160. Piper advertised that the owner of a Cherokee 180 could carry four FAAstandard 170-pound people, full fuel and 175 pounds of baggage and optional equipment.

Several improvements were incorporated in all three Cherokee models in 1963, including Dynafocal engine mounts, more soundproofing material, a better door-latching mechanism and a 35-amp alternator to replace the generator used previously. Dynaflair wheel fairings were standard equipment on the Cherokee 180 and were offered as an option available on the other models.

Base price of a standard Cherokee 180B was \$12,900. The airplane also was offered with optional Custom, Super Custom and AutoFlite packages. The Custom package included what Piper called night-flying equipment: a rotating beacon, a 27-channel VHF transceiver and a navigation receiver. The Super Custom package featured a radio compass (ADF), an artifical horizon, a directional gyro, a vertical speed indicator, a turn and bank indicator, outside air temperature gauge, clock and vacuum pump. The AutoFlite package included a Piper AutoControl single-axis autopilot.

The Cherokee 180B also could be

transformed into a seaplane with optional Edo Model 2000 floats.

Piper introduced the Cherokee 180C in 1965 with a number of changes. The most noticeable was the new, twopiece fiberglass engine cowl that replaced the metal, hinged cowling on the earlier model. Piper claimed the new cowl added about one knot to cruise speed, and it certainly looked better. However, the earlier hatches allowed the pilot to take a good look at the engine compartment during preflight. The new cowl provided only a small door for access to the oil dipstick.

The propeller shaft was extended 1.25 inches in an attempt to eliminate torsional vibration from the engine crankshaft. The exhaust system also was moved farther forward to reduce noise and heat in the cockpit.

The instrument panel was redesigned to allow avionics to be stacked to the right of center in the panel. The rear seats were moved two inches back to provide more legroom for passengers, and toe brakes and a boarding step were tacked onto the options list.

In 1967, Lycoming switched from seven-sixteenths to one-half inch exhaust valves in the O-360-A3A engine. The larger valves are able to cope better with heat generated during combustion. For the Cherokee 180, the valve change meant an increase in recommended time between major engine overhaul (TBO) from 1,200 to 2,000 hours. (Owners of most Cherokee 180s built before 1967 have had one-half inch valves installed in their engines. This is an important thing to check for if you are considering purchasing an early-model Cherokee 180.)

The D model made its debut in 1968 with a third window on each side of the fuselage. Inside, the instrument panel was rearranged to conform with the industry-standard T configuration.

Several modifications were made to engine and flight controls. The push/ pull engine controls were replaced with a centrally mounted throttle quadrant. The boxlike control wheel was replaced with an open yoke, and the roof-mounted stabilator trim-control crank gave way to a trim wheel located between the front seats.

During the early 1970s, the airplane underwent some minor tweaks. The 1970 Cherokee 180E has flush door handles and overhead air vents. Bucket seats replaced the rear bench seat in the 1971 F model. In 1972, Piper of-



fered factory installed air conditioning as an option for the G model.

The Cherokee 180 was stretched into the Challenger in 1973. The fuselage is eight inches longer. The wings are two feet longer and have sculptured tips. Piper also paid some attention to improved crashworthiness by redesigning the front seats to collapse progressively on impact and by including shoulder harnesses with inertial reels as standard equipment. Gross weight was increased from 2,400 to 2,450 pounds.

The Challenger was renamed the Archer in 1974. The most substantial change to the Cherokee 180—a new wing—appeared with the 1976 Archer II. The tapered wing is three feet longer and has a higher aspect ratio than the previous wing. The new wing, which had been introduced on the Warrior a few years earlier, improved the Cherokee 180's roll response and climb performance. (It also can reward a slightly hot approach with a generous float down the runway.)

In 1978, the airplane appeared with wheel fairings, a modification that added a few knots to cruise speed.

The Cherokee 180/Archer has undergone quite a bit of tweaking outside the design engineering rooms at Piper. Short-takeoff-and-landing kits are available from Bush Conversions, Horton STOLcraft and Isham Aircraft. Knots 2 U can install gap seals on the ailerons, flaps and stabilator. Hoernerdesign (drooped) wing tips are available from Met-Co-Aire Aircraft Modifications. (See "Modifications Directory," August 1982 *Pilot*, p. 53.)

The Cherokee 180 in the accompanying photographs is owned by Cary Cox of Frederick, Maryland. It is a 1963 model with a 1975 exterior paint scheme. Like most owners, Cox speaks highly of his airplane's load-carrying capability and economy. He has flown all around the country with his family and says his airplane cruises at about 123 knots and burns about nine gallons of fuel per hour when leaned to the best economy mixture at 75-percent power. Leaned to best power, the Cherokee cruises at about 128 knots and burns about 10 gph.

The typical price for a good, used Cherokee 180 ranges from about \$9,000 to more than \$20,000, depending on the condition of the airframe, the amount of engine time and the equipment included. (Late-model Archers, of course, are much more expensive.)

The airplane's Lycoming O-360 is reputed to be one of the most reliable general aviation piston engines. Engine overhaul costs range from about \$3,500 to \$5,000. Owners report that a routine annual inspection costs about \$200 to \$300.

Prospective buyers should check an airplane's logbooks for compliance with applicable airworthiness directives. The Cherokee 180 has been subject to a surprisingly large (considering its simple construction) number of ADs, although most are rather minor. A directive issued in 1967 requires inspections every 100 hours for signs of deteriorating fuel tank sealant. If deterioration is found, the tanks must be removed and resealed.

The tachometers in most Cherokee 180s built before 1970 have a red line from 2,150 to 2,350 rpm. Continuous operation within this range can cause torsional vibrations to be transmitted from the engine crankshaft to the propeller blades. In extreme cases, the blades will fail.

In addition, several ADs have required inspections and repairs of control yokes, main landing gear torque



Early model Cherokee 180s (left) have push/pull engine controls and "stick it where it fits" instrument arrangements. Beginning with the D model in 1968 (right), the airplanes were equipped with a throttle quadrant and the standardized T configuration of instruments.

FIXED VALUES

There's really nothing remarkable about the 180. Except, perhaps, its honesty.

links, stabilator hinges and balance weights, and fuel quantity gauges.

But the airplane hardly can be called a maintenace monger. Indeed, a wellcared-for Cherokee 180 is a good investment that can return years of economical and enjoyable family flying.

Cary Cox's experiences with his Cherokee 180 seem to be typical. The only unexpected problem in four years were indications of a hot-running engine. The problem was traced to an improperly installed exhaust gas temperature probe. The probe was changed, and the problem disappeared.

Like a phantom, the fog has stolen away, revealing a dazzling day—a great day for flying. Halfway out of the cabin door, I pause, thinking that it has been a while since I knocked the rust off my air work. On impulse, I flag down the fuel truck.

Yes, I reason, a few steep turns, a couple of stalls and maybe some chandelles certainly wouldn't hurt. I settle back into the still-warm pilot's seat.

I hear another chuckle coming from somewhere. The gyros have spun completely down. The chuckle must have come from me.

	Cherokee 180B	Challenger	Archer II
	PA-28-180	PA-28-180	PA-28-181
Base price new	\$12,900	\$16,990	\$23,980 to \$44,470
Current market value	\$9,000 to \$20,000	\$13,000 to \$27,000	\$24,000 to \$60,000
Specifications			
Powerplant	Lycoming O-360-A3A	Lycoming O-360-A4A	Lycoming O-360-A4M
	180 hp @ 2,700 rpm	180 hp @ 2,700 rpm	180 hp @ 2,700 rpm
Recommended TBO	1,200 hr	2,000 hr	2,000 hr
Propeller	Sensenich, 2 blade,	Sensenich, 2 blade,	Sensenich, 2 blade,
	fixed pitch, 76-in dia	fixed pitch, 76-in dia	fixed pitch, 76-in dia
Wingspan	30 ft	32 ft	35 ft
Length	23 ft 4 in	24 ft	24 ft
Height	7 ft 4 in	7 ft 9.6 in	7 ft 9.6 in
Wing area	160 sq ft	170 sq ft	170 sq ft
Wing loading	15 lb/sq ft	14.4 lb/sq ft	15 lb/sq ft
Power loading	13.3 lb/hp	13.6 lb/hp	14.2 lb/hp
Seats	4	4	4
Gross weight	2,400 lb	2,450 lb	2,550 lb
Empty weight	1,225 lb	1,386 lb	1,416 lb
Useful load	1,175 lb	1,064 lb	1,134 lb
Payload w/full fuel	887 lb	776 lb	846 lb
Fuel capacity	300 lb/50 gal	300 lb/50 gal	300 lb/50 gal
	288 lb/48 gal usable	288 lb/48 gal usable	288 lb/48 gal usable
Oil capacity	8 qt	8 qt	8 qt
Baggage capacity	125 lb, 19 cu ft	200 lb, 24 cu ft	200 lb, 26 cu ft
Performance			
Takeoff distance,	775 ft	720 ft	870 ft
ground roll			
Rate of climb,	720 fpm	725 fpm	735 fpm
sea level			
Cruise speed/Range	123 kt/610 nm	123 kt/600 nm	129 kt/580 nm
(Fuel consumption)	(60 pph/10 gph)	(60 pph/10 gph)	(63 pph/10.5 gph)
@ 75% power, 7,000 ft			animation is position
Service ceiling	15,700 ft	14,200 ft	13,650 ft
Landing distance,	600 ft	635 ft	925 ft
ground roll			
	Limiting and Recom	mended Airspeeds	
Vx (Best angle of climb)	60 KIAS	62 KIAS	64 KIAS
Vy (Best rate of climb)	74 KIAS	77 KIAS	76 KIAS
Vno (Max structural cruis	ing) 121 KIAS	125 KIAS	125 KIAS
Vne (Never exceed)	148 KIAS	154 KIAS	154 KIAS
Vs1 (Stall, clean)	56 KIAS	58 KIAS	54 KIAS
Vso (stall in landing configuration)	50 KIAS	53 KIAS	48 KIAS
Vfe (Max flap extension)	100 KIAS	100 KIAS	102 KIAS
Va (Design maneuvering)	112 KIAS	112 KIAS	113 KIAS
All specifications are based on manufacturers' calculations. All performance figures are based on			
standard day, standard atmosphere, at sea level and gross weight, unless otherwise noted.			