Piper Archer II

Looking better all the time

It had been an interesting approach, and as we swung around to park between a Gulfstream II and a DH 125 in the grey, blowing rain, we felt good about the airplane and its equipment.

We were greeted at the operations desk with the normal hellos and a "what are you flying today?"

"A Piper Archer."

"Piper Archer? What's that? Some new twin?"

"Cherokee 180."

"Cherokee 180? You gotta be kiddin'. It'll get blown away out there."

There were some smirks and gross comments from some of the other hot shots in the room as we gathered our gear and went out the door saying something to the effect that the source of their high amusement had gotten us there as well, if not as quickly, as all the big blowtorches on the ramp.

The next day the low, boiling clouds had moved out to sea, and the frontal passage revealed a brilliant blue sky without even a trace of haze to mar the visibility.

We droned along in the sunlight, thinking of the attitude of many pilots towards basic airplanes; and of the pecking order, or hierarchy, the fraternity imposes based on hours, ratings and type of aircraft; . . . and on how quickly many pilots forget their simple beginnings.

The reactions in the office when we were asked if we wanted to fly the newest Cherokee 180/Archer II were similar. The highest enthusiasm expressed by anyone was "okay, sure."

The reaction has been the same about any of the basic standard aircraft that are the backbone of general aviation.

As the flight progressed, we looked around the airplane and asked what was wrong with it and similar types. They are all basically honest, straightforward and have adequate perform-


N2527U
ARCHER II

Piper Archer II

continued

ance, particularly for the average load and distance for which they are flown.

As we lived with the evaluation aircraft, N 2527U, in an interesting variety of missions and weather we came to the conclusion that it is not the airplane that is the problem. Rather, aircraft such as the Cherokee family, the 172/182 and the descendants of the Musketeer are so much a part of the aviation world that they are a standard; standard, commonplace and, perhaps, taken for granted.

That's a somewhat negative view of success. After all, more than 30,000 fixed-gear, four-place Cherokee variants have been produced since the basic design was introduced in 1961, and nearly 9,000 Cherokee 180/Archers have been sold since the original introduction in 1962.

For the name-that-plane buffs, the Cherokee 180 became the Challenger in 1973 and the Archer in 1974.

The most substantial change in the 17-year life of the aircraft was the introduction of a tapered, higher aspect ratio wing in 1976. Roll response was significantly improved over the "fat pillow" wing of previous models. It was dubbed the Archer II.

Almost every other modification has been detail refinement rather than substantive change. But the attention to detail has made a basically good product better, easier to fly and more comfortable. There have been incremental improvements in performance over the years, as well. The most recent was the result of new gear fairings introduced last year, which provide an 8-knot improvement over the bare-legged version.

The 1980 model has a redesigned paint scheme to distinguish it from its predecessors. Why the companies feel it necessary to do so is a matter of constant debate and, we think, little value. We have seen some very impressive paint designs disappear in the process of model year cosmetic adjustments. What constitutes a good design is subjective, of course, but how many pilots can there be who rush out to buy the "all-new" version of any of general aviation's enduring designs, no matter how much money they have?

The other detail changes to the Archer include what the manufacturer calls quick-change wheel fairings for easier maintenance. We don't know if this is a result of cracking of the fairings, which we have heard some complaints about, or whether the change was made to provide easier access to wheels, brakes and shock struts.

The other tweaks are inside: new interior fabrics, lower headrests which reduce the feeling of claustrophobia for rear seat passengers, provision for an optional avionics master switch and improved (optional) ventilation system.

One other change has been imposed by federal noise regulations and demonstrates the silliness that pervades much rulemaking. Noise requirements contained in FAR 36 have resulted in a paper reduction in performance (2 knots at high cruise power) for the Archer, as they undoubtedly will for other aircraft.

The rated 180 hp at 2,700 rpm has now become limited to a maximum of five minutes. The maximum continuous power setting permitted, 2,650 rpm, develops 178 hp. In five minutes the Archer can climb to well over 3,500 feet, by which time the possibly offended people on the ground will be out of earshot. Even sillier to us is the fact that

the Archer can't pull 2,700 rpm in a climb (nor can any other fixed-pitch, propeller-driven aircraft pull maximum rpm in climb). The number of times someone might run at full throttle in low altitude level flight are very few.

As anyone familiar with Piper's PA-28 series will see, little has changed for 1980. And why should it?

Perhaps you are as indifferent to Cherokees as the jet jockey. But consider a couple of things.

This is the type of aircraft most of us fly and buy. And, as fuel becomes more expensive, as maintenance gets more costly and as all the other elements that go into the cost of renting or leasing or owning continue to climb, not only will more twin owners or potential twin owners consider single-engine aircraft, they and the rest of the marketplace will consider *simple* aircraft—aircraft which might not exude macho, nor the ultimate in performance. They will have to consider aircraft that make good sense for the average type of flying more and more frequently.

Aside from pure sport aircraft and cost-is-no-object, get-me-there, professionally flown business aircraft, pilots will have to become more selective, more practical and will have to make more rational studies of need versus total cost.

There is another aspect we should all consider: how proficient are we, and how demanding of proficiency is the type of aircraft being considered. The Archer and similar category aircraft are simple. The systems are simple. There is relatively little to forget, and they are very forgiving of rusty or marginally competent pilots.

Initial, fixed and operating costs are already sufficiently high to make an airplane the next highest purchase consideration to a house—or second house or college education—and slightly ahead of most exotic cars, particularly if one is considering purchasing new.

The Archer we flew had a list price of $61,645. Piper states that the average equipped price is $42,763. In exchange for all that one gets four comfortable seats (although over six-footers will find marginal headroom in the rear two seats), good basic systems, simplicity and relative ease of maintenance, straightforward flying qualities and utility.

The Archer's performance is competitive for its class. Given the high cost of avgas, fuel burns as low as 8.8 gph (best economy mixture) at 75% power, which produces a true airspeed of 126 knots, and 7.6 gph for 122 knots at 65% power will become more and more ap-

This Little Baby Was Flown Only on Weekends...

With nearly 9,000 PA-28-180/181 series aircraft (the latter refers to the tapered wing introduced in 1976) in the fleet ranging in age from 17 years old to brand new, a careful buyer has a lot of aircraft to chose from, covering a significant price range, for basically the same performance.

The earliest Cherokee 180's in good condition with average equipment (usually considered to be one nav/com and full panel and the usual array of accessories) retail for between $11,000 and $13,000. When new, the 1963 version had a base price of $12,900 and an average factory-equipped price of about $15,000.

Every rated member of the *Pilot* staff has flown various versions of the PA-28-180. One checked the model closely when he and a partner were looking for a relatively simple, four-place aircraft.

They evaluated the Cessna Skyhawk, Skyhawk XP, Cardinal and Skylane; Grumman Cheetah and Tiger; the Piper Warrior, Archer and Arrow before making a decision. Although they liked Grumman's airplanes, they decided that parts and service were not as readily available as Piper and Cessna models.

After considering performance and equipment requirements, initial and operating costs and their budget, they selected a 1976 Archer II.

They agreed that the Archer's fixed-pitch propeller, fixed gear, manual flaps and proven engine that burns 100-octane fuel and has a high recommended TBO, were important considerations in keeping maintenance costs and downtime to a minimum. The fact that few, relatively inexpensive Airworthiness Directives (AD's) had been issued against the airplane/equipment, was also a strong point.

They also believed that the Archer's lower airspeed was justified by an average seven gallon-per-hour fuel consumption, nearly half that of more complex airplanes they were considering. Even with full fuel, their IFR-equipped Archer still allows 605 pounds payload, more than adequate to meet their missions.

Buying a used Archer made it possible for them to select a newer model aircraft with an adequate avionics package than would have been possible with a more sophisticated used aircraft.

They felt the airplane's construction was good quality (except for plastic wing tips and stabilator tips that tend to crack) and that the interior was, too, particularly when compared to other manufacturers' aircraft. The original upholstery looked new and the cabin trim was still in place (except for a plastic overhead air vent) on the aircraft they bought, which had more than 1,400 hours of use.

The airplane has lived up to their expectations, with their only complaint being the aggravation in keeping the airplane properly trimmed in pitch.

With nearly 200 hours logged in the aircraft, they agree it was a good choice.

Something for Nothing

Pilots who have flown with distance-measuring equipment for a while begin to take it for granted. It becomes almost a necessity. It's rather humorous to see someone who has been spoiled with the automatic information get in an aircraft without DME and start fumbling and trying to remember how to calculate such basic things as time, distance and groundspeed.

On the other hand, there are many aircraft owners for whom the average price of more than $3,000 plus installation outweighs the need for automated information.

Late last year Collins introduced its DCE-400 distance computing equipment (see the December 1978 issue of *Pilot*, page 96, for a description).

There has been a good deal of discussion about the value of the product, which lists for $1,180. Several staff members have flown aircraft equipped with the DCE-400 over the past few months, and the jury is still out. The information is nice to have when there isn't any DME, but not essential.

Many people seem to feel it is an expensive gadget.

The digital RMI feature of the unit does appeal to quite a few pilots, for they have recognized the value of getting immediate bearing or radial information for procedures such as intercepting radials or locating intersections. In addition, the distance computation is almost instantaneous (groundspeed and time-to-station information take about 10 minutes to calculate).

If one were equipping a new airplane or retrofitting the avionics in an older one, there is a way to get a DCE free (almost), at least if one is buying Collins MicroLine.

Most purchasers specify the nav/com in the product line with electronic frequency display. With dual units, the additional cost of electronic over mechanical is almost exactly that of the DCE-400. Since the DCE can electronically display bearing to or from either nav receiver, it isn't necessary to duplicate the information display on the nav receivers.

So one can get the groundspeed and time-to-station calculations done electronically as the icing on the cake.

For some aircraft owners, it may be one of the few bargains around.

continued

pealing to potential aircraft owners.

Many pilots lean conservatively. But with the increasing cost of fuel, the need to conserve as much as possible and the approval of the engine manufacturers of best economy settings on more aircraft that are approaching peak EGT, the trade-off between slight performance reduction and reduced fuel consumption can mean significant savings. For instance, the difference between leaning for best power and best economy in the Archer is 1.2 gph at 75% power (and 3 knots difference in speed) and 1.5 gph at both 66% and 55%. That's an average savings in direct hourly operating cost of more than $1.50.

There are very few operational quirks to the Archer. Preflight is so simple that there isn't any excuse to not be thorough every time. The manual recommends that the fuel strainer be drained with the fuel selector in each tank position. This is a bit awkward and time-consuming. The drain is on the lower left side of the engine cowl, and one needs either a long, thin arm to reach through the pilot side window to switch tanks or an annoying trip from the

cockpit to the drain and back to the cockpit to switch tanks and back once again to the drain.

We were stumped for a time by new fasteners on the one-piece upper cowl, which must be removed to enable a good inspection of the engine compartment (which should be done regularly). The external latches are simple enough, but there are two rotating, internal latches at the outboard side of each air intake flanking the propeller which can be a mystery—or lead to expensive breakage—for those who don't know the trick.

The rest of the procedures for engine start, runup and pretakeoff are uncomplicated. The location of switches and the panel design help to minimize traps for all but the most careless. Many pilots have approved of the abbreviated power-setting chart Piper incorporates in the transparent sun visor. This year, checklists have been moved from the panel to the visor, as well. It helps further clean up the panel but still provides the essential information in an easy-to-refer-to place.

The Archer cabin is a relatively roomy, comfortable flying environment. Soundproofing seems better than ever to those with experience in the model, and wind noise around the windshield and door is quite low. Ventilation, particularly with the optional blower fan, and heating are more than adequate. Air conditioning is an available option, but the weight and cost make it seem practical only for those operating in the hottest climates.

The airplane is stable and manageable throughout its performance range. Stalls are almost not stalls. Aileron response is adequate. Lateral stability is, too, so long as fuel burns are alternated between the two tanks. Minor pitch instability is characteristic of the relatively short-coupled PA-28 series, and frequent retrimming is required during cruise or when someone changes position in the cabin.

The Archer's demand on the pilot during instrument flight is low and its performance and response is of a nature to keep a pilot comfortable and able to tend to the approach.

We mixed it up with the big boys a few times and were able to maintain 120 knots during one approach to fit in with a host of 727's aimed at a crossing runway. There was some concern with bleeding sufficient speed off to comply with ATC's request to stop before the intersection, but the good manners and controllability of the Archer made the approach and landing unruffled. Partial power reduction slowed the aircraft to its 102-knot flap speed quickly, and the transition from there to the recommended final approach speed of 66 knots was smooth.

The short-field takeoff procedure calls for 25 degrees of flaps and gets one off the ground at 49 knots at gross weight. We found it a good maneuver for wake-turbulence avoidance departures.

There are $27,635, and 185 pounds, of options in 2527U. The bulk of it is avionics (Collins MicroLine with electronic frequency display, encoding altimeter, ADF, DCE, transponder, glideslope and marker beacon receivers and a coupled Edo-Aire Mitchell IIIB autopilot).

That's a lot of capability for such an airplane. Piper's average equipped price of $42,763 would probably be closer to $50,000 for an adequately equipped, IFR-capable version.

The Archer and its competitors may not turn a lot of heads on a business jet ramp, but who cares? It's a manageable, maintainable, durable and useful airplane. What more do you need, particularly if you're footing the bill? EGT

Piper Archer II

Piper PA-28-181 Archer II
Basic price: $34,010
Price as tested: $61,645

Specifications

Engine	Lycoming O-360-A4M
	180 hp @ 2,700 rpm takeoff
	178 hp @ 2,650 rpm FAR 36 max continuous
	Recommended TBO 2,000 hr
Propeller	
	Sensenich 2-blade, fixed pitch; 76 in dia
Wing span	35 ft
Length	23 ft 9.6 in
Height	7 ft 3.6 in
Wing area	170 sq ft
Wing loading	15 lb/sq ft
Power loading	14.2 lb/hp
Passengers and crew	4
Cabin length	8 ft 1 in
Cabin width	3 ft 5.5 in
Cabin height	4 ft 1 in
Empty weight	1,418 lb
Equipped empty weight (as tested)	1,604.6 lb
Useful load (basic aircraft)	1,132 lb
Useful load (as tested)	945.4 lb
Payload with full fuel (basic aircraft)	844 lb
Payload with full fuel (as tested)	657.4 lb
Gross weight	2,550 lb
Gross weight (utility category)	1,950 lbs
Fuel capacity (standard)	50 gal (48 usable)
Oil capacity	8 qt
Baggage capacity	200 lb (24 cu ft)

Performance

Takeoff distance (ground roll)	870 ft
Takeoff over 50 ft	1,625 ft
Rate of climb (gross weight)	735 fpm
Maximum level speed (sea level)	2,650 rpm
	128 kt (148 mph)
Cruise speed (75% power, 8,000 ft), best power	
	129 kt (149 mph)
Cruise speed (65% power, 12,000 ft) best power	
	125 kt (144 mph)
Cruise speed (55% power, 12,500 ft) best economy	107 kt (123 mph)
Range at 75% cruise (with 45-min reserve) 8,000 ft	520 nm (600 sm)
Range at 65% cruise (with 45-min reserve) 12,000 ft	565 nm (650 sm)
Service ceiling	15,000 ft
Absolute ceiling	15,750 ft
Stall speed (clean)	54 kt (62 mph)
Stall speed (gear and flaps down	
	48 kt (55 mph)
Landing distance (ground roll)	935 ft
Landing over 50 ft	1,400 ft