

PILOT FLIGHT CHECK:

Piper's New

WARRIOR

A redesigned wing and a few other touches
make the Warrior a different airplane, despite
its close relationship to the Cherokee line

by BERL BRECHNER / AOPA 466558

■ ■ Rumors that Piper Aircraft Corporation was coming out with a new four-placer near the low end of the price scale began circulating last summer.

Then Piper made it official. They did indeed have a new airplane: one intended to give added depth to the company's single-engine line.

The new plane would be called the Warrior. It is an addition to the Cherokee line, which has been the core of Piper's single-engine production since 1961. Its official name is "Cherokee Warrior," and it is flight-certificated as a modified Cherokee.

It is a comfortable, smooth-flying, fixed-gear airplane—which also happens to be reasonably inexpensive to operate. Its 150-hp powerplant is said to use as little as 8.4 gph at 75-percent power, and 2,000 hours are permitted to pass between engine overhauls.

If compared with Cherokees already being produced, the Warrior is a hybrid, falling between the 140 and the 180. In front of the firewall is a 150-hp Lycoming engine, same as on the 140. Behind the firewall is a stretched 180 cabin.

It's the wing that makes you realize

you're seeing something different. The Warrior's wing, with its 35-foot span, is 3 feet longer than the 180 wing. In addition it has been tapered, swept and drooped.

Technical descriptions of a wing are, for many pilots, unimportant. They want to know how it flies. So did I.

Redesigning the wing has given the Cherokee Warrior, in effect, more lift. With the same engine as in the 140, the new model claims almost 200 pounds more carrying capability, slightly better speeds, more rapid climb, improved slow-flight characteristics, and generally more responsive flying.

In appearance, several changes differentiate the Warrior from its Cherokee brothers: wider wingspan, tapered leading edge instead of the pancake-like wing of other Cherokees, a larger stabilator, and a smaller nosewheel. In addition, the Warrior, like the rest of the Cherokee line for 1974, has rounded, paint-trimmed windows and a distinctively new paint scheme with a primary color covering the whole top half of the fuselage.

The Warrior I flew at Piper's Vero

Beach, Fla., plant was well equipped. In fact, it was number one off the production line, and used as a press demonstrator and photo model. With all its options, it would sell for about \$27,000. A standard, no-option Warrior is priced at \$14,990.

Preflight is pure Cherokee: under the wings for the fuel drains, then into the engine compartment through doors that open the full length of the cowl. Inside the cowl another Warrior change can be seen—a redesigned exhaust and muffler system places the muffler up front, almost 3 feet forward of its firewall location on earlier Cherokees. The move is to reduce cabin noise.

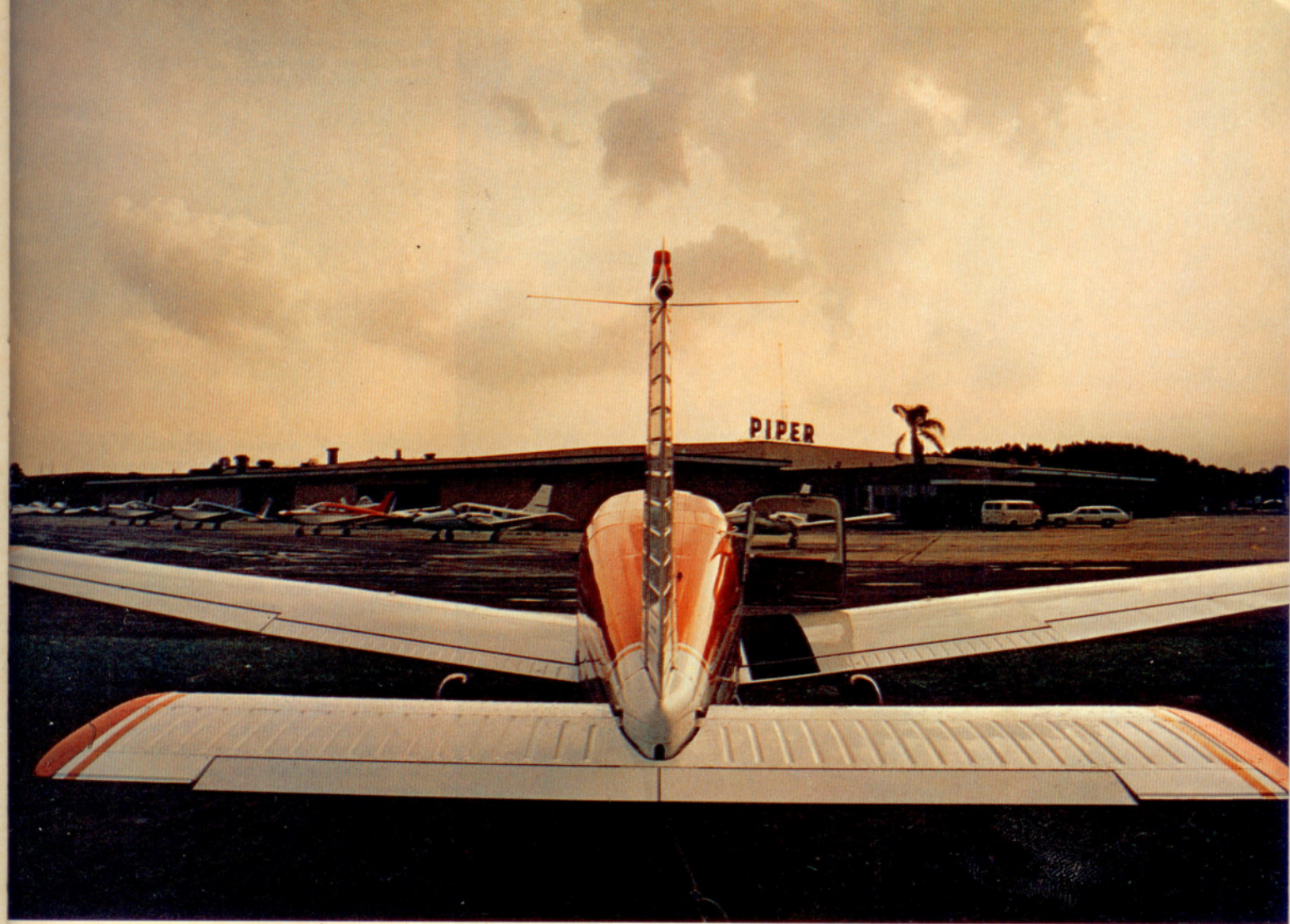
Entry into the cockpit is through a wide passenger side door. Once seated, the pilot can use an optional vertical adjustment to move the seat up or down 3 inches. The adjustment in the Warrior uses a button under the seat rather than the crank found in other Cherokees—depress the button and pull up or push down on the seat, then release the button.

Leg room, both front and back, is good. But even so, Piper designers have still provided 24 cubic feet of baggage space behind the rear seats, accessible through a squarish door on the right side of the fuselage, just behind the trailing edge of the wing.

The nosewheel steering system is new this year. Piper Engineering Supervisor Vince Tennant said the new system offers "improved mechanical advantage" where the pedal connects to the nose-gear pushrods. In addition, a two-way spring is installed in the rods to dampen any impact on the wheel.

The nose steering system is tight, making control while taxiing very accurate and positive. However, some strength must be exerted for sharp turns at slower speeds. Toe brakes (standard on the Warrior and installed on both sets of rudder pedals) make tight turns into parking spaces no problem.

Panel layout is virtually the same as



Warrior N55151, the first off Piper's production line, tied down across from Piper operations building at Vero Beach Municipal Airport. Photos by the author.

that of the past several years' Cherokees. Much research goes into panel layout, and for the most part the Warrior's is very readable and usable. But a couple of things about the panel bothered me.

First, the mag/ignition key switch is located directly under the left yoke column, hidden from the pilot's line of sight and somewhat inaccessible.

Second, a row of five rocker switches is at center panel, with the split master (battery/alternator) at the left end of the row. The two adjacent switches are for the electric fuel pump and the landing light, switches that get a lot of use at takeoff and landing time. Miss your intended switch by a half-inch or so and you might find yourself being a bit surprised.

A Narco-made radio-switch panel (the aircraft I flew had dual Narco 11A com and Narco 11 nav units) made radio switching a matter of pushing the right button. The pushbuttons replace a row of miniature toggle switches. (Vero Beach Municipal, by the way, since last summer has had an operating tower and ground control.)

When using the radio, I found myself draping the microphone over my knee rather than stowing it in its panel-mounted slot. When hung on the panel, the microphone was difficult to grasp without keying the mike button.

Runup at 1,800 rpm completed, I and Piper pilot John Dezutti (AOPA 337149) were ready to roll.

I first took off from 4,975-foot runway 21. It was a hot and hazy summer day; temperature stood at 91°F and there was an angling headwind of about 8 knots. Close to a third of the runway was eaten up before the Warrior was firmly in the air. Takeoff was without flaps. That flight was made with the aircraft and load totaling 2,116 pounds, 209 pounds under the Warrior's 2,325-pound maximum allowable gross weight.

Several other flights showed similar length of the takeoff run. Rotation on these takeoffs was made at about 70 mph, and no flaps were used. Piper's published performance figures for the Warrior list a takeoff run (with 25 degrees of flap) of 1,410 feet. Distance to clear a 50-foot obstacle is officially set

at 1,760 feet.

Directional control during the takeoff run was simple, torque exerting minimal force to the left. With trim set near neutral, a solid, steady pull was required for a clean liftoff, but a little nose-up trim took the weight off the wheel.

Warrior N55151 had electric trim installed, operated by a small sliding switch positioned on the yoke for the left thumb. The trim operated smoothly, slowly enough not to cause abrupt attitude changes, and was effective in quickly neutralizing forces on the yoke during climbs and descents. Manual trim adjustments could also be made on a trim wheel between seats.

Climb in the Warrior was good—especially when compared with that of its equivalent-horsepower predecessor, the Cherokee 140. Initial climb at 80 mph showed almost 700-fpm vertical speed. Continuing through 3,000 feet with full power (recommended climb setting), I increased indicated airspeed to about 89 mph and was still climbing at 550 fpm. The fixed-pitch prop was turning about 2,450 rpm at that altitude. Rudder

The Warrior over the Florida coastline near Vero Beach. Its Cherokee roots are evident.



THE NEW WARRIOR continued

trim, set with a small knob under the panel, allowed torque effects to be trimmed out during climb.

It was during this initial climb, too, that I noticed how extremely quiet the Warrior is. Piper is offering an optional soundproofing kit for its 1974 Cherokees. The kit costs \$175 and weighs about 18 pounds. On the Warrior, you can do without it.

With altitude, climb diminished rap-

idly. By 7,500 feet the vertical speed indicator registered 350 fpm, and a bit over 8,000 that climb was down to 300 fpm.

Leveling out at 8,700 feet, the Warrior inched up to its top speed. After several minutes, with the prop turning 2,625 rpm, the airspeed had crept up to 137 true. Temperature at altitude was 50°F. Leaning out the engine produced about 25 additional rpm and a true airspeed of about 138 mph. At that point in the flight the aircraft was probably about 240 pounds under gross weight.

Not until a week later did I get a chance to compare my numbers with Piper's—the company's speed performance figures are, in fact, very conservative.

When power was reduced to about 65 percent (2,525 rpm) the Warrior still offered 134 mph true. Pilot Dezutti said a cruise power setting below 65 percent was not recommended.

With its newly designed wing, the Warrior trimmed up very quickly, settling into a steady speed and altitude without any porpoising characteristics.

In stalls and slow flight the new wing also scores points. At 8,500 feet a gentle stall without flaps comes at an indicated 45 mph. With the manual flap handle up all the way (40-degree flap setting) the Warrior stops flying at about 40 mph with the wheel into your chest—but it doesn't really stall. It begins to buffet and settle at 500 to 600 fpm, but won't nose over. I held it in this configuration for about 45 seconds and the plane remained stable, even showing slight aileron control.

In slow flight at 55 mph indicated, no flaps, the Warrior had plenty of control, including rapid roll response. Thirty degrees of bank to either side would bring on the loud stall horn, but no stall tendency. With flaps down, slow flight was easily maintained at 50 mph. From that speed, a slow throttle application up to full power put the plane in a nose-high attitude. With the wheel all the way back, the Warrior stalled briefly and then immediately recovered. It began repeating this sharp porpoising at about two-second intervals, but lost almost no altitude.

Normal and steep turns presented little problem in holding altitude. Longer ailerons on the new wing make rolls quick and precise. Rolling from a steep turn to the left into a steep turn to the right took little more than a second. Visibility, generally very good (there is still the post down the middle of the windshield, though), is limited by the roof in steep turns. With the seat adjustment up, my view of the horizon to the left was blocked by the roof in a 55-degree bank. The front seats are, however, situated about 5 inches farther forward, in relation to the wings, than in earlier Cherokees, allowing better visibility below.

A very light touch on the yoke goes a long way in the Warrior. It has less of a nose-heavy feel to it than the Cherokee 140. The ailerons have a tendency to neutralize themselves; even when you're turning the wheel on the ground, you can feel a slight "grab" in the neutral position.

I cut the power and put the aircraft into an 85-mph glide. The Warrior flew an extremely stable 700-fpm descent. With power back on, a straight-in approach to runway 11 would give 8 knots of crosswind from the right. At 80 mph, just a bit of cross-control put the plane on a dead-aim approach for a no-flap landing on the numbers. Firm back-pressure in the flare (again, electric trim took the work out of being close to the runway) put a lot of pavement under the wheels before they touched the ground—lots of time to straighten out for touchdown. There was no bounce, but I landed the Warrior on its main gear solidly, almost hard, then planted its nose onto the cement. Roll after touchdown seemed standard, and braking was sure.

First landing—try again. Full flaps this time, and now into the wind. With the flap lever pulled up three notches, 40 degrees of flap are down. They are relatively small flaps, however, and don't pitch the nose too far toward the ground. Approach at 75 mph this time, and again, lots of floating and a solid touchdown. A greased landing in a Warrior will take a bit of practice; however, loss of control on landing seems almost an impossibility.

An overhead vent system was installed in N55151. A 6-pound option at \$175, the vent takes air from an opening at the top of the vertical stabilizer and sends it through a large tube inside the top of the fuselage to four overhead cabin vents. For another \$190, a 7.6-pound fan can be inserted in the system to provide airflow when the plane isn't moving. The fan was not part of the system in my plane; thus, the hot day still required an open door while taxiing, to get any air circulation into the cockpit.

Air conditioning, available on other Cherokees, has not yet been engineered for the Warrior.

On a second flight, I put two passengers, full fuel, and a little baggage

aboard, bringing the weight to about 99 pounds under gross. Differences in flying the aircraft at the heavier weight were almost negligible. On this flight, I set the Warrior up for a 2,400 rpm (about 75-percent power) cruise at 1,500 feet and pulled true airspeed of 128 mph. The landing on that flight was a little softer.

Another option on the Warrior was the Piper Auto-Control III two-axis autopilot, capable of tracking VOR, localizer or gyro compass headings. The unit worked smoothly, nicely intercepting omni radials, turning the aircraft gradually onto the track without overshooting. Maintaining altitude, however, remained the pilot's responsibility.

The basic Warrior (\$14,990) is a very basic airplane. Even wheel fairings and the engine primer system, which were standard on the '73 Cherokee 140 Cruiser and 180, are now included in two additional-cost "operational groups" for the Warrior. These groups consist of basically the same equipment, except that the more expensive of the two (\$2,930) includes gyro instruments and pump, and several other panel hole fillers.

Three Narco and three King radio packages (these packages also include Piper autopilots or wing-levelers) are available, too, ranging from 27 pounds of avionics for \$3,835 to 68 pounds for

1974 PIPER CHEROKEE WARRIOR

Specifications

Empty weight	1,301 lb
Useful load	1,024 lb
Gross weight	2,325 lb
Baggage	200 lb
Wingspan	35 ft
Wing area	170 sq ft
Length	23.8 ft
Height	7.3 ft
Fuel capacity	50 gal
Oil capacity	8 qt
Engine	Lycoming O-320-E3D, 150 hp
Propeller	fixed pitch
Wing loading	13.67 lb/sq ft
Power loading	15.5 lb/hp

Performance

Top speed, 2,700 rpm	135 mph
Cruise, 75% power	133 mph
Range, 75% power, best power	690 mi
Range, 75% power, best economy	720 mi
Service ceiling	12,700 ft
Rate of climb	649 fpm
Takeoff run (25° flaps)	1,410 ft
Takeoff over 50-ft obstacle (25° flaps)	1,760 ft
Landing roll over 50-ft obstacle	595 ft
Stall speed, 40° flaps	58 mph

\$12,210. Other options above and beyond the basic cost include heated pitot, rear shoulderbelts, headrests, ELT, anti-collision lights, sun visors, and more. A comfortably equipped cross-country airplane will cost well above the \$14,990 basic list price.

The Warrior (some Piper people still referred to the plane as the "Lance," the in-house name during its 18 months of development) was not removed from the experimental category until August of this year. By September it had already been photographed for ads, flown by the aviation press, and put into production.

Bernard Marks, Piper's Vero Beach administrator of sales, said that about 1,000 Warriors will be built in the 1974 production year, comprising about one-third of the Vero Beach plant's total production. He stressed that the new model was in direct competition with Cessna's 172/Skyhawk, explaining that "when you go after a market, you should go after the thing that's most successful."

With the increase in Warrior production, significantly fewer 140s and 180s will come off Piper lines in 1974: about 400 fewer 180s than in 1973, and 200 fewer 140s. Marks said the Warrior is a logical first-purchase plane for the pilot who learns to fly in a 140.

Piper computes total operating costs

of the Warrior at \$11.51 per hour, if the plane is flown 300 hours per year. That includes all basic costs, such as fuel, maintenance and inspections, overhaul, hangar and insurance. (The hourly cost does not include the initial purchase price or registrations and taxes.) If the plane is flown 600 hours per year, Piper computes operating costs at \$9.86 per hour.

For those kinds of prices, a pilot or fixed-base operator will have a very nice airplane, of good size and reasonable cost. And as Piper eyes the number one spot in lightplane sales, it appears the new Warrior will lead the company's charge. □



The panel of N55151 includes optional Narco radios and a gyro instrument package.



The new airplane's wing is tapered, swept and drooped.