

Pilot Flight Check:

Piper's New Cherokees

Two more members of the tribe—Challenger and Charger (née 180 and 235, respectively)—get the two-way stretch



by DON DOWNIE / AOPA 376636

The 1973 Charger (stretched 235) incorporates a number of significant design changes and it is being touted as the "four-place, 161 mph airplane with a useful load [1,450 pounds] almost equal to its empty weight (1,550 pounds)." Fuel consumption, at 75% power, is 13 gph. Suggested list price—\$24,390.

Piper Aircraft photo

Piper Aircraft Corporation's Cherokee tribe of Vero Beach, Fla., is getting bigger and better each year. Back in 1965, the tribe added the first "BIG Six"—the six-place 260 hp and 300 hp Cherokee Six models. Last year they stretched the retractable-gear Arrow by five inches and added two feet to the wingspan. Arrow sales soared this year (up 30%) and for 1973, the in-between members of the tribe, known in the past as the Cherokee 180 and the Cherokee 235, have joined in the two-way stretch.

Of the original Cherokee models, only the Cherokee 140 remains the same size, but even it has some innovations for 1973, including an additional version—the "2+2 Cruiser."

Since some 26,000 man-hours of engineering reportedly went into the two-way stretch program, both the 180 and the 235 have been given new names for 1973. The stretched 180 has become the Cherokee Challenger and the stretched 235 is now the Cherokee Charger.

Piper officials formally introduced the 1973 single-engine lineup at their Vero Beach facility immediately following AOPA's annual Plantation Party, held this year at Hollywood, Fla. "They're all out there. Get a set of keys and have at it," said Piper's sales personnel when The PILOT went for a close-up look at the Cherokee line.

Turning a pilot loose with almost carte blanche on five new airplane models is akin to leaving the back door of a candy store open near a grade school. Needless to say, we flew them all. We went where we wanted, within the confines of southern Florida; we tried out the basic model 140 in an actual student-instructor environment; we hauled a gross weight load of passengers and baggage in the new Charger; and we delivered another Charger—that's the 235—to West Texas to see what it would do cross-country.

First pick (just because it happened to be closest to Piper's Delivery Center building at Vero Beach) was the new Challenger (180). Homework prior to our Cherokee "raid" was a review of the owner's manuals of the various models. Since everyone was breaking for lunch, I took the keys, "kicked the tires," and headed for River Ranch, Fla., some 50 miles to the west, for a southern-Florida-style hamburger and iced tea. The new stretched 180, with its fixed-pitch prop, handled well in the moderate midday turbulence.

One of the great advantages of the Cherokee tribe is that if you can master any one of them, there are few problems in transitioning to any of the others. Piper has done a fine job of maintaining continuity in design, handling characteristics, and the location of essential controls. Even in areas where there might be room for debate, the company is consistent. It's only after flying the top of the Cherokee line—the big Cherokee Six—that you realize fully the continuity of design and handling.

As a standardized procedure, all Cherokees have their mag checks at 2,000 rpm with an allowable drop (on

the 235 Charger) of 175 rpm on either mag as long as both mags are within 50 rpm of each other.

The two-way stretch of the 180 and the 235 couldn't have happened to a more receptive set of airplanes. By moving the front seats forward, Piper has given the pilot over-the-wing visibility that just won't quit. New contoured seats are both space-saving and more comfortable than the bulky cushions formerly used, and there's been a spin-off of an extra 2½ inches of usable cabin space. Vertical seat adjustments are options. The 235 Charger I ferried to West Texas didn't have the option and I finally used a jacket as a cushion, putting my graying hair within an inch of the cabin roof, to get better visibility over an extended glare shield on the 1973 models.

Not so incidentally, the standard front seats on all new Cherokees are designed to collapse progressively, "in event of excessive descent," and the glare shield is padded to absorb shock. Shoulder harnesses attach to the basic cabin structure, with an inertia reel and snap on the outside edge of the buckle so they drop away as the lap belt is opened. This shoulder harness arrangement—standard equipment in front and optional in back—is so comfortable and untroublesome during flight that I found myself not bothering to even remove it on three-hour cross-country legs.

All of the two-way stretched models, except the 235 and the "Big 6," have added two feet of wingspan and stabilators have been standardized on the one used initially on the Cherokee Six models. Both the 235 and the "Big 6" received their two feet of added wingspan earlier to allow an increase in fuel capacity. Modified Hoerner tips are used on the Challenger (180) and the Arrow II for aerodynamic efficiency, while the wingtips on the Charger (235) are similar to the tips on the "Big 6" and carry 17 gallons of fuel each.

The one-yard-wide doors on the

stretched Cherokees have a dual latch on the normal door handle as well as a two-point lock when the overhead lever is closed—four latching points in all. On one flight in the new Arrow II, I didn't have both lower latches engaged and there was a mild whistle in flight. Rather than fight it, I made a circuit of the field and put in another landing to latch the door properly. Local pilots explained that there is a possibility of not engaging both lower latches if you slam the door too hard. This, however, is absolutely no problem in flight.

Since seasons slide by swiftly, it may seem completely out-of-phase to talk about PiperAire (air conditioning) units when there may now be snow at your home base. But during Piper's press preview at Vero Beach, temperatures were in the mid-to-high 80's and the humidity was even higher. Piper's exclusive air-conditioning unit, a first in the industry, weighs 67.4 pounds, costs \$1,195 (includes the "solar control" tinted Plexiglas that cuts light transmittance from 89% clear to 70% tinted), and slows a 140/Cruiser/Flite Liner by four to five mph in cruise. The same unit fits all Cherokee models and it is dived in the open position to redline on each production model test flight. An electronic switch automatically closes the air-conditioning unit at full throttle to eliminate drag on takeoff. Consequently, many southern training schools are climbing out at less than full throttle in the lower altitudes to keep the air conditioning working once the ship is airborne.

Frankly, I had never before seen any real reason for an air conditioner in an airplane. But that was before I flew all models of the Cherokee in Florida on a series of warm, humid days. After about the second flight from Vero Beach, I found myself using the air conditioner on the ground and at lower altitudes (and loving every minute of it). Piper reports between 25% and 35% of its new production models are being or-

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dered with factory-installed air conditioning. Pilots in the northern part of the country and those who normally fly from high altitude fields won't want this option, but in places like Vero Beach, the air conditioner is a nice, heavy, expensive accessory item.

What better way to check out the 1973 model 140's than to go along as an instructor with a student. As a basic trainer, the Cherokee Flite Liner (suggested 1973 list price, \$14,980) is being used at the more than 400 Piper Flite Centers that have standardized their flight training programs. Even the business and personal use versions—the two-place Cherokee 140 and the new "2+2 Cruiser"—will undoubtedly wind up being used as combination trainers and rental aircraft in many locations. (Only difference between the latter two versions is the Cruiser comes with four full-size seats, while the standard 140 has only two. Piper said, "provision for the installation of rear seats is standard in the Cherokee 140. You can order the '2 + 2 Cruiser' version at the outset, or retrofit whenever you wish to add the two family seats.") Suggested selling price for the 1973 Cherokee 140 is \$11,990; for the Cherokee Cruiser, it's \$12,870.

Since my CFI (Certified Flight Instructor rating) remains current, I asked Piper's Operations Manager Bill James if he could find a student from the company's flying club who would go along with me and let me try the ship out from the right seat. He called Betty Rice, a secretary in Piper's engineering offices, who became a grandmother and soloed the same week. She was working on her commercial license "to maintain proficiency" when we took Cherokee Cruiser N3079T and bored some holes in the humid Florida skies.

It was the first time in the 1973 Cruiser for both Mrs. Rice and me. She commented immediately about the extended glare shield as limiting some over-the-nose visibility. This particular new ship, however, had an optional adjustable left seat, so my "student" cranked it up as high as possible. Later discussions with factory pilots indicated the glare shield ceases to be a problem after a few hours of familiarization. The extended glare shield was designed into the 140's to reduce windshield reflection on an increasing number of instrument training flights.

Our Cruiser came into the air easily, despite the 85° temperature that made the air conditioner a definite asset. Almost immediately, Mrs. Rice pointed out a discrepancy between airspeed and rate of climb. She soon ascertained that the airspeed indicator was reading fast and, on a subsequent landing, we dropped in a couple of feet because of this instrument error. The stall warning light, located at the far left of the instrument panel and frequently in bright sunlight, is not particularly ef-

The 1973 four-place Cherokee Challenger (stretched 180) has a number of safety features its predecessor didn't. It also has a roomier cabin, longer wingspan and bigger stabilator. Useful load also has been slightly increased. Suggested list price—\$16,990. PILOT staff photo



fective. However, you can't use a stall-warning horn on a line of Cherokees when one has a retractable gear with its associated warning horn. Thus, for consistency's sake, the stall light, instead of the warning horn, is installed in all Cherokee models and will teach students to rely on feel and sight and airspeed and rate of sink, rather than to wait for the red light or horn.

We explored the excellent hands-off stability of the Model 140. Then came a series of stalls, but no spins since the weight of the air conditioner and other accessory items put this particular aircraft in the "normal" (no spin) category rather than the lighter weight 1,800-pound "instructional" utility group. In full, wheel-back, stalls, my "student" tended to pick up a low wing with aileron. The little Cherokee does this very well, but some other aircraft have different reactions to aileron in a deep stall. I asked for stalls with no aileron and the wheel all the way back, but habits are hard to break. Finally, I took the wheel and held it all the way back with the ailerons in a neutral position. Mrs. Rice was able to hold the ship right-side-up using only "top rudder" as the 140 bucked mildly through a series of full-stall oscillations.

In slips and rolling-on-a-point (circa World War II), the Cherokee runs out of rudder at just above the 20° bank and the nose will swing toward the low wing despite full "top" rudder.

We shot landings at Valkaria and Melbourne, two of the many Florida airports that date back to World War II training days. After a landing at Melbourne, the sneaky "instructor" asked for a crosswind takeoff on the airport's 11,200-foot Runway 27. At about 20 feet off the ground, I said, "Close the throttle." Mrs. Rice complied, then dropped the nose and made a good touchdown in a simulated forced-landing situation. There was ample room for a second takeoff.

Whatever you call it—Flite Liner, Cherokee 140, Cruiser—the 140 is an excellent trainer. Over-the-wing visibility is great. Quick-acting manual flaps require a minimum of pressure and eliminate any confusion about where the flaps may be placed. Our final landing at Vero Beach was with full flaps, over a repair crew that was resurfacing the first 1,100 feet of Runway 11. We completed what I'd consider a profitable training flight in a fine training aircraft.

I had to check in my wallet to find out when my CFI "expired" before signing off the dual instruction. (I wish FAA would find another word for the date on which a rating becomes invalid!)

Things are refreshingly casual on the Piper flight line despite the number of aircraft that are turned out there. Gus March, a punch press operator just in from an hour in a club airplane, went along with me in a new Arrow II to check out another of the Cherokee tribe. It was his first trip in the faster, retractable Cherokee, which carries a suggested list price of \$24,200 for 1973.

According to numbers computed for us by Piper's engineering staff, the four-place Arrow II is one mph slower than earlier models because of the added two feet of wing and the resultant 50-pound increase in gross weight. With "the landing gear that thinks for itself," the Arrow is the No. 1 seller in its category and reportedly a particular favorite with insurance companies. There's a "squat switch" that prevents retraction on the ground. An airspeed sensor keeps the wheels down and locked until the climb speed exceeds 85 mph. We deliberately flicked the switch for gear-up after rotation at slow speed and nothing happened other than a red light and horn indication. As the airspeed picked up, the retraction cycle started; the horn quit; and the red light changed to an orange "in transit" indication.

There's a new override lock on the automatic gear system for use during instruction in slow-speed flight. As long as this override is in use, the warning light flashes. (Someday, somewhere, a pilot named "Murphy" will undoubtedly find a way to "beat" this particular engineering system.)

After stalls and slow flight at various flap settings, we went in for a landing at the 2,600-foot Hibiscus grass strip just south of Vero Beach. First came a low pass to check for water puddles. We circled and came in on final approach with enough power to remain 10 knots over the published stall speed of 64 mph. The stall-warning light flicked intermittently in mild turbulence but all controls were completely responsive. We touched down, braked on the grass, and turned around in considerably less than half of the grass runway.

We paused briefly for a couple of pictures in this tropical setting, then dropped a notch of flaps and hopped into the air well within the 770 feet in-



PIPER'S 1973 CHEROKEES

(Specifications and Performances)

	140/Cruiser	Flite Liner ("Utility")	Challenger	Arrow II	Charger	Cherokee Six (260/300)
Seating capacity	2-4	2-4	4	4	4	6-7
Engine	150 hp Lyc	150 hp Lyc	180 hp Lyc	200 hp Lyc	235 hp Lyc	260 hp Lyc 300 hp Lyc
Wingspan (ft)	30.0	30.0	32.0	32.0	32.0	32.8
Length (ft)	23.3	23.3	24.0	24.6	24.1	27.7
Height (ft)	7.3	7.3	7.8	8.0	7.8	7.9
Gross weight (lb)	2,150	1,800	2,450	2,650	3,000	3,400
Useful load (lb)	905/867	535	1,064	1,151	1,450	1,694/1,601
Fuel capacity, std. (gal)	36	36	50	50	84	84
Top speed (mph)	139	142	148	175	161	166/174
Cruising speed (mph)	132	118	141	165	152	158/168
	(75% power, 7,000 ft)	(60% power, 7,000 ft)	(75% power, 7,000 ft)	(75% power, optimum alt)	(75% power, optimum alt)	(75% power, optimum alt)
Cruising range (mi)	540	432	688	780	905	560/525
	(75% power, 7,000 ft)	(60% power, 6,000 ft)	(75% power, 7,000 ft)	(75% power, optimum alt)	(75% power, optimum alt)	***950/***880 (75% power, optimum alt)
Service ceiling (ft)	10,950	15,500	14,200	15,000	12,000	14,500/16,250
*Takeoff run (ft)	800	675	720	770	**800	740/700
*Landing roll (ft)	535	450	635	780	1,040	630
Best rate of climb (mph)	89	85	89	100	100	105
Rate of climb (fpm, sea level)	631	880	725	900	800	850/1,050
Stall speed (mph, gear-flaps down)	55	50	61	64	63	63
Base price	\$11,990/\$12,870	\$14,980	\$16,990	\$24,200	\$24,390	\$28,740/\$31,500

* Figures are for standard takeoff and landing rolls, not over 50-foot obstacles.

** With 25 degrees flaps

*** With built-in reserve fuel

licated in the owner's manual. It should be noted, though, that we were not approaching gross weight.

The large Cherokee Six stabilator makes it easier to keep the 1973 Arrow's nosewheel off the ground during roll-out. For example, I was able to keep the nose gear in the air down to 45 knots indicated with two of us in the front seats and no baggage aboard. The electric trim on the stabilator takes considerable load off the wheel during flareout, or you can trim for hands-off on final approach and flare with minimal wheel force. (Personally, I don't like full nose-up trim during flareout, because of the possible necessity for a go-around in a situation where forward wheel forces could be excessive.)

Since I was scheduled to ferry a new Charger (235) to West Texas, the only remaining aircraft to fly at Vero Beach was the "Big 6". No need for a name change here, nor for a two-way stretch. This bird is already stretched! The Six is a big airplane with a cabin four feet wide and 13 feet long. The new "contoured" seats give even more usable space inside. Since they taper to the top, the seats give even more space to the 10-inch aisle. A seventh seat is optional for three-across center seating.

When ordering a Six, you have the option of either a 260 hp or 300 hp version (\$28,740 for the Cherokee Six 260 and \$31,500 for the Cherokee Six 300). Most pilots flying in high country prefer the higher horsepower. Chuck Swartz, another Piper flying club member, went along on my flight check. He stated one of his main reasons for joining Piper was its liberal, economical learn-to-fly

program. He's working on his commercial license now.

My last trip in a Six had been in September of 1970, in Arizona, [Oct. 1970 *PILOT*, page 42]. On the recent flight check, at sea level and with just two of us aboard, performance was well above specifications. Both the Six and the Charger (235) have their fuel-selector valves on the floor with a four-tank-and-off position. The off position has a guard that must be depressed.

The main fuel sump on the four-tank Six and Charger is below the forward edge of the rear seat. During preflight, the "ops manual" recommends checking all positions at the main sump (11 seconds required to get fuel from the tip tanks and six seconds from the mains). Pilots should then get back out of the cockpit after this draining to ensure that the sump hasn't jammed partially open with a piece of foreign matter. In addition, each tank has an under-the-wing quick drain.

One of the things that I like about all the Cherokees is the permanently affixed checklist for takeoff and landing. It's right there in front of you all the time and not in an owner's manual stuffed in a side pocket, or copied on the back of a sun visor. There's really no excuse not to use a checklist.

Unless they're on special order, all production model Cherokees are painted white with some trim. (Preflight in the "ops manual" calls for a check to "ensure that wings and control surfaces are free from snow, ice, or frost." This isn't easy to do on a white surface, nor is a white airplane easy to see against smog or snow. But then, Florida

has neither.)

There's no control lock for any of the new Cherokee tribe. The "ops manual" suggests that "aileron and stabilator controls be secured by looping the safety belt through the control wheel and pulling it snug." Piper representatives said the control locks were removed from the 1973 designs because someone in a "Brand X" aircraft had been able to take off with them installed and had wrecked the bird. (On the other side of the coin, using seatbelts puts an asymmetric load on the control cables that may eventually require rerigging.)

I have one minor problem with the Cherokee tribe that most pilots probably will not encounter. I wear a hefty size 12 shoe for my flat feet and have spent considerable time in World War II military cockpits where your feet rode up in a stirrup affair. With weak brakes—a common occurrence back then—it was S.O.P. to slide your feet up on the pedals to get all the pressure available. This system does not work too well with the Cherokees because they have a structural member just above the brake toes that you can slide your feet over if you really work at it.

There's just one minor modification that I'd personally install on any Cherokee that I owned or flew consistently. On all the Cherokees with controllable props, the throttle quadrant has a standard left-to-right throttle, prop, and mixture control. The mixture control with its idle cutoff is of a different shape and color than the prop; yet it is still possible for "Murphy" (and some of the rest of us) to inadvertently slide his hand a
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The four-place Cherokee Arrow II, the retractable-gear member of the Cherokee tribe, has a landing gear that automatically extends when speed gets down to 105 mph. New this year is an airspeed sensor that prevents gear retraction on takeoff until climb speed exceeds 85 mph. An override system lock is provided.

PILOT staff photo

Piper

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couple of inches to the right and come back on the wrong lever. Pilot error, sure, but there's no detent or lock that you must move to get the mixture control out of full rich. On at least two occasions during the recent PILOT flight checks, I had my hand on the mixture control after takeoff when reaching for the prop. Since it was daylight and I was VFR, it was a simple matter to glance down and correct the situation. At night, IFR, and busy changing frequencies, there still remains the possibility of getting the wrong lever. However, this isn't a Cherokee exclusive. Several other airframe manufacturers have idle-cutoff systems that can be activated with a single motion. If nothing else, a caution in the owner's manual about this remote possibility might be helpful.

Prior to picking up Cherokee Charger (235) N15219 for delivery to Wes-Tex in Lubbock, Tex., I went along on a final production checkride with veteran Piper pilot George Fogerty. He confirmed that a couple of minor "squawks" had been corrected; demonstrated a dive to redline; and asked if there were anything else I wanted to explore before he turned me loose. Per request, we positioned the fuel selector valve in the midpoint; the pressure dropped but the engine didn't complain.

Vero Beach Radio was cautioning aircraft about a strong crosswind from the north, gusting to above 20 knots. Fogerty said, "Let me show you how to handle all these ships in a crosswind. I use full flaps and try to make a normal touchdown. Just as soon as the main gear hits, I retract those manual flaps to spill any lift and the aircraft has no tendency to float toward the downwind side of the runway. The ship is on, and solid, with good nosewheel steering."

Fogerty proceeded to demonstrate his technique and it worked out fine. I followed this procedure on every landing all the way home.

It had been very VFR every day for a week while I was in Florida but there

was rain and scattered cumulus build-ups as I put my bags in N15219 and scattered sectional charts over the right front seat for the ferry flight to Texas. Rather than file IFR in a brand-new ship, I elected to pick my way around the weather and enjoy the scenery. I followed the coast north past Melbourne, crossed Orlando, missed Disney World, and landed to check for non-existent leaks and to get fuel at Gainesville. Then on into the setting sun for a landing at Dustin, across the bay from Eglin AFB in the panhandle of Florida. Beautiful scenery, superb fishing, and an eager fixed-base operator (FBO) named Glois Brand (AOPA 177500). More about that in a later issue of The PILOT.

We stopped at Jim Gaston's most interesting resort at Lakeview, Ark., where 20-foot "John Boat" float trips down the White River are featured. His 2,400-foot grass strip (marked at 2,200 feet on the sectional charts) is certainly no challenge since he's had AT-6s, medium twins and a large variety of homebuilts on the airport. It did provide a chance, however, to try a for-real off-pavement landing and takeoff with the new stretched 235.

Continuing the flight, we zeroed in on Lubbock, Tex., and faced unpredicted headwinds. A landing at Childress, Tex., seemed advisable, just to top off both main tanks. When I finally taxied up to the Wes-Tex sign in Lubbock at sunset, I wished the Charger were available all the way to the West Coast, my ultimate destination. It's a fine, comfortable, surprisingly fast flying machine. Flying alone, with perhaps 60 pounds of baggage and cameras, I tried out consistently at 160 mph or over, at 4,500 feet with power settings of 2,400 rpm and 23 to 24 inches. "The book" calls for only 152 mph. Headwinds precluded going to the most efficient operating altitude.

Piper's operations manual calls for a service ceiling of only 12,000 feet for this high-powered package. The lower-powered, somewhat lighter Arrow II is carded for 15,000. I'll bet the stretched 235, 3,000 pounds gross and all, will climb well above 12,000 feet.

All in all, Vero Beach has quite a growing Cherokee tribe. □