

THE DAKOTA ADVANTAGE

Powerfully simple, simply powerful

BY MARK R. TWOMBLY



THE most powerful of Piper's PA-28 line celebrates its twenty-fifth birthday in 1989. The names have changed over the years, beginning with the Cherokee 235 in 1964, followed by the Charger, the Pathfinder, and the current iteration, the Dakota, but the airplane has always adhered to the values of simplicity and a strong work ethic. Piper's 1989 Dakota remains faithful to the creed.

There is no real secret to the longevity of the PA-28-235/236 line. In the beginning, Piper selected a dependable engine with a large cache of horsepower and mated it to a straightforward, docile airframe. The formula has remained unchanged for a quarter century.

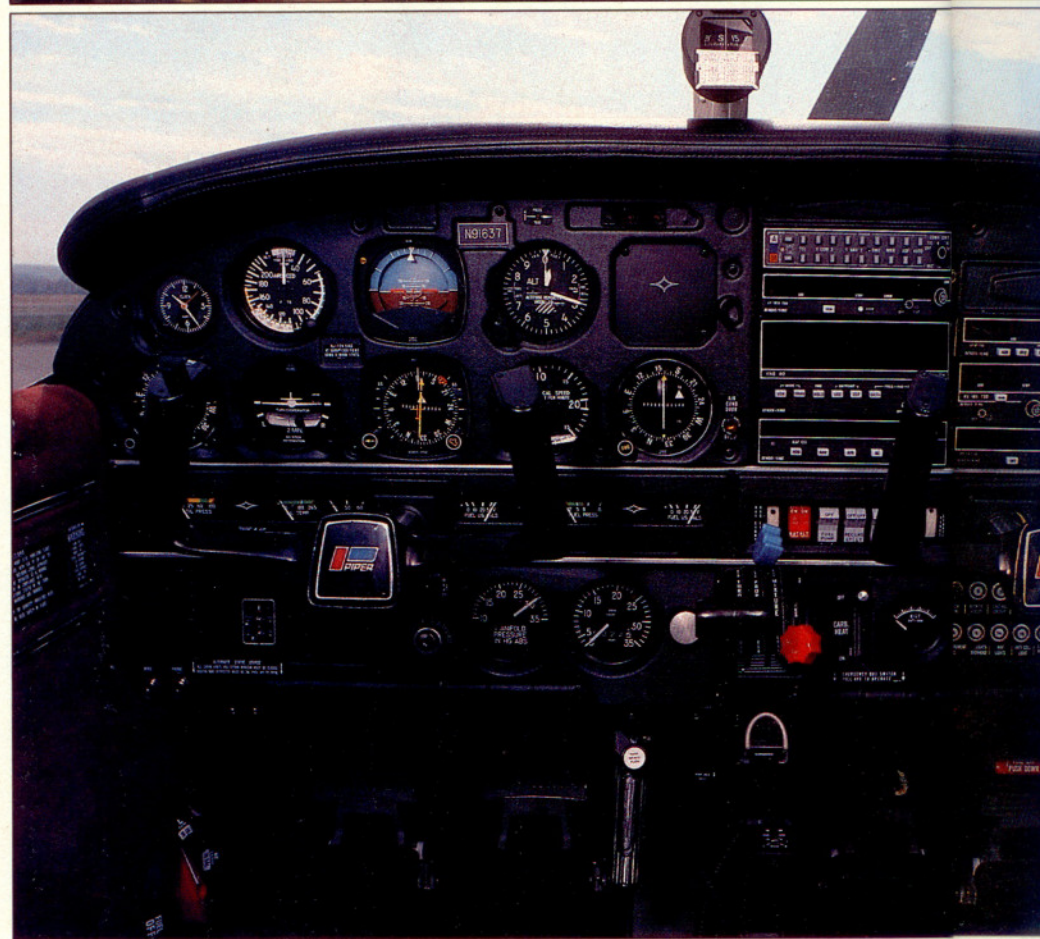
The Dakota is unspectacular in that it is not especially swift and that the wheels don't come up. What it lacks in panache is compensated for in practicality. The original 235 had a useful load slightly in excess of its empty weight. Today's Dakota is heavier, but it still is one of the few singles with the potential to be filled with fuel, people, and bags and stay within the gross weight and center of gravity envelope.

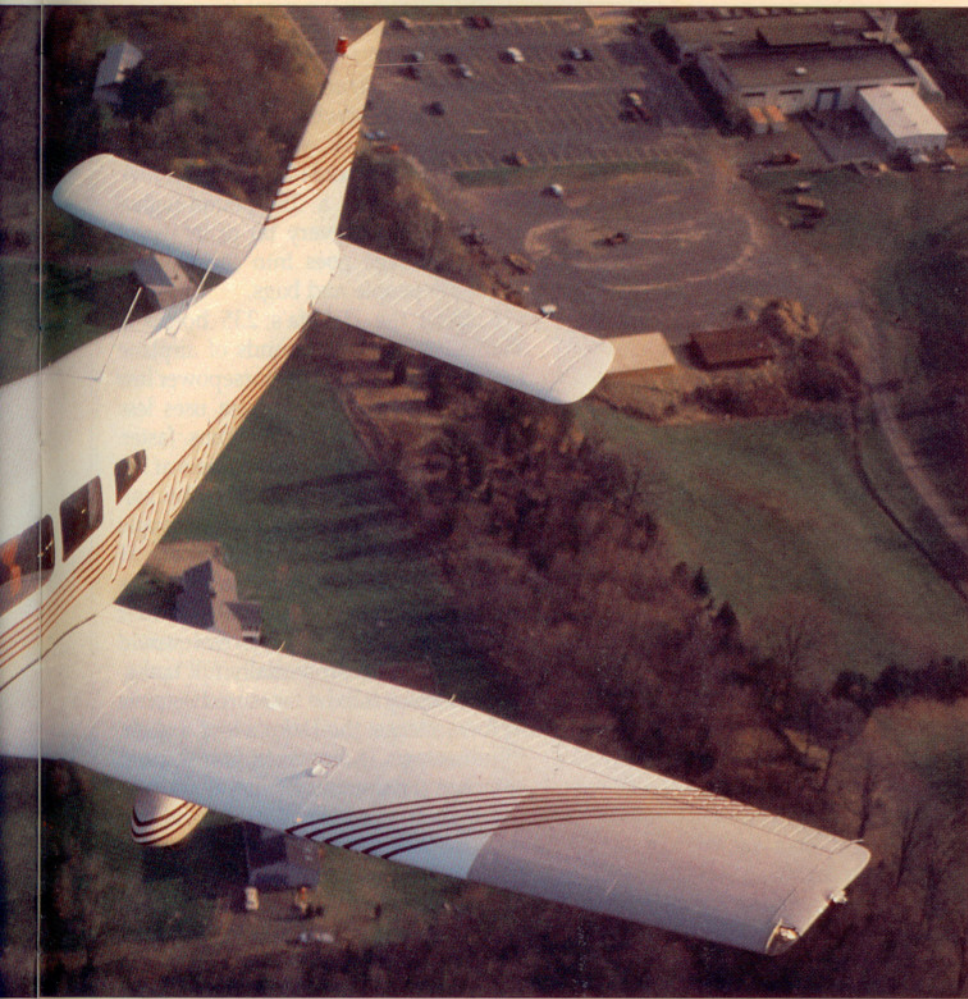
The demonstrator we flew, N91637, was a 1989 model equipped to the gills with 262 pounds of options, including air conditioning. With the tanks brimming, four 170-pounders still could be invited aboard, although they would have to limit their baggage to a newspaper. Even with a heavy options list, the owner of this Dakota will have to do a lot less choosing between filling either the tanks, seats, or baggage bay than do friends flying most other light singles.

The Cherokee 235, a direct descendant of the original Cherokee 150/160, was in production through 1972. All had the Hershey-bar wings. As the models progressed through the alphabet to the 235F in 1972, empty weight gradually increased, and Piper could no longer claim the 235 could heft its own weight.

Early models had standard 50-gallon fuel capacity, with an additional 34 gallons in two wing-tip tanks available as an option. A Lycoming O-540 is a bit thirsty for just 50 gallons, so the aux tanks were made standard in 1968. None of the tanks are interconnected, so the pilot is a busy fuel manager.

In 1973 the Cherokee 235 became the Charger when Piper lengthened the fuselage, which gave passengers an additional five inches of legroom and a wider door. Gross weight increased 100





pounds, and the stabilator span was increased. The Charger gave way to the Pathfinder, which had improved creature comforts.

The model was given its most extensive overhaul to date in mid-1978. The cowl was redesigned, and Piper switched from a constant-chord wing to one with tapered outer panels and two fuel tanks with 72 gallons of usable capacity. The planform had already been introduced on the Warrior, Archer, and Arrow III.

The switch to the semi-tapered wing was accompanied by a 50-percent increase in the size of the ailerons, which made the Piper singles very nice airplanes to fly. The Dakota is heavier in roll than the other PA-28s, perhaps because of its greater fuel weight in the wings, but still very pleasant.

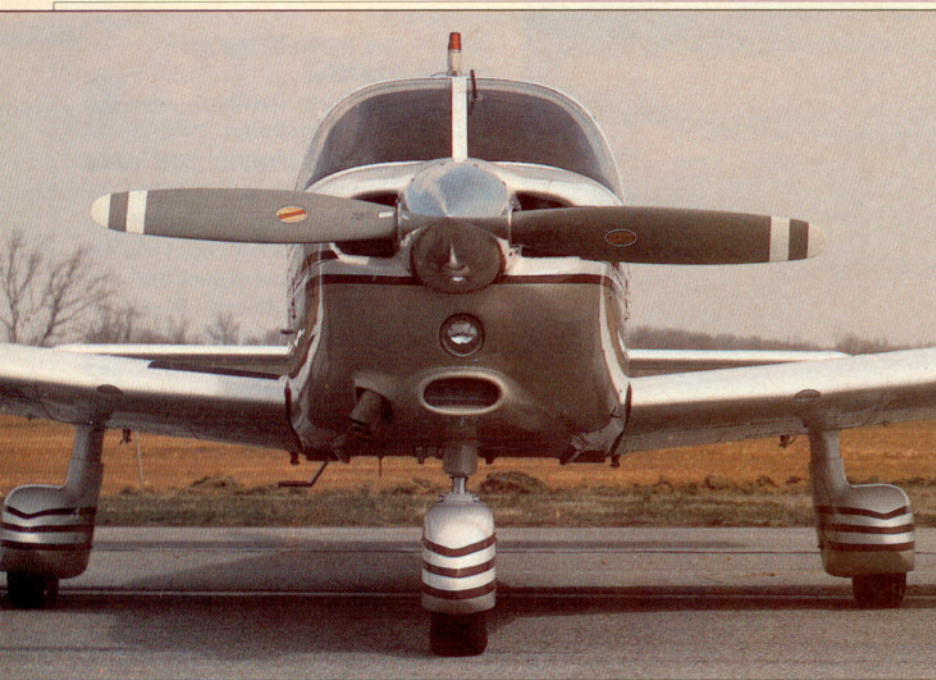
The Turbo Dakota made its debut in 1979 with a 200-hp Continental engine and fixed-wastegate turbocharger, the same package as in the Turbo Arrow. The Turbo Dakota was in production for just one year.

The big six-cylinder Lycoming has a relatively easy time of it in the Dakota. The same basic engine is rated at 260 hp in the Cherokee Six. With fuel injection, it produces 300 hp in the Saratoga and, with turbocharging, 350 hp in the Navajo Chieftain.

The Dakota's engine is carbureted, as it has been since the beginning of the 235 line. The first Cherokee 235s had fixed-pitch propellers. A constant-speed prop was offered as an option on later 235s and was made standard on the Charger. The Dakota's 80-inch Hartzell propeller has a lower rev limit—2,400 rpm compared to 2,575 rpm on the earlier models—and the engine has a higher compression ratio for compatibility with 100-octane gas.

The Dakota proves the worth of building commonality into a line of airplanes, as Piper has done with the PA-28. The transition from a Warrior or Archer into a Dakota is painless. Instrument panels and power controls are virtually identical, except for the Dakota's prop control and manifold pressure gauge. Warrior and Archer pilots will feel at home with the Dakota's fixed landing gear, manually operated flaps, and absence of cowl flaps.

We borrowed N91637 from Skytech, Incorporated, a Piper dealer based at Martin State Airport in Baltimore. A few weeks earlier, Skytech had sold a brand-new private pilot his first airplane, a Da-



kota. Often regarded as a step-up purchase for someone who has been flying a fixed-pitch single, the Dakota makes good sense as a first airplane. It is well within the capabilities of a low-timer, yet it has the performance to grow with the pilot. It doesn't take too many sub-100-knot trips with the back seats empty before the owner of a four-place, entry-level sky thrasher starts thinking about moving up. Why not move up at the very beginning?

The Dakota has to be one of the easiest airplanes to manage on approach. Its weight, ample power, and constant-speed prop give the pilot plenty of tools to manage airspeed and descent rate. Approaches can be flown at 120 knots to stay on friendly terms with big-city controllers or at 72 knots, $1.3 \times V_{so}$, at uncontrolled airports.

It takes a considerable pull on the yoke to make the nosewheel arrive after the mains, especially with just one aboard and lots of fuel. The problem stems from the generous amount of nose-down trim that must be used when deploying the flaps. It's best to apply nose-up trim early and often when on short final.

The Dakota we flew had a very comfortable and attractive interior finished in red leather trim and cloth side curtains, a practical and pleasing touch. It was equipped to go places, too, with a Bendix/King avionics package, including KNS 80 RNAV, HSI, and KAP 100 single-axis autopilot.

It looked good on the outside as well. The 1989 paint scheme with its widely

spaced stripes and creamy colors works well on the nicely proportioned Dakota. The nose from fire wall forward is 11 inches longer than the Archer's and is capped in an oversize, pointy spinner.

Crunch the numbers, and it becomes clear where the Dakota's horsepower pays its way. A good comparative airplane is its sister ship, the Arrow. The two share the same airframe, but the Arrow clearly has the edge in élan because of its retractable gear. It's a mixed blessing, however, because the folding gear

increases insurance premiums and maintenance reserves.

Standard empty weights are almost equal, and each holds 72 gallons of fuel. The Dakota has a 250-pound-higher gross weight, so every bit of its useful load advantage goes into the payload column—people and bags.

Each of the Dakota's 235 horses is saddled with 12.76 pounds of airplane to pull—one pound per horsepower less than the Arrow. The Dakota uses less runway on takeoff and climbs faster. Each cruises at just over 140 knots at 75-percent power at altitude. At 13.6 gallons per hour, the Dakota burns a couple more gallons an hour, so it will not fly as long or as far. Unless, of course, the manifest for each airplane calls for four adults. In that case, the Arrow would have to depart with partially full tanks.

If efficiency is to be measured in terms of fuel mileage, the Dakota is at a slight disadvantage. If, however, you want to compare the amount of fuel it takes to move each person in the airplane one mile, the Dakota should come out on top because it is more likely all four seats can be occupied.

Statistical advantages exist mostly in the eye of the beholder, of course—the Arrow shines with lighter loads—but if the requirements call for short-field and climb performance and a generous payload, it's going to be tough to get the upper hand on the Dakota. □

Piper PA-28-236 Dakota

Base price: \$103,900

Specifications

Powerplant	Lycoming O-540-J3A5D, 235 hp @ 2,400 rpm
Recommended TBO	2,000 hr
Propeller	Hartzell two-blade, constant-speed
Length	24.75 ft
Height	8.17 ft
Wingspan	35.42 ft
Wing area	170 sq ft
Wing loading	17.6 lb/sq ft
Power loading	12.8 lb/hp
Seats	4
Cabin length	8.08 ft
Cabin width	3.5 ft
Cabin height	4.08 ft
Empty weight	1,634 lb
Max ramp weight	3,011 lb
Max takeoff weight	3,000 lb
Useful load	1,366 lb
Payload w/full fuel	935 lb
Max takeoff weight	3,000 lb
Max landing weight	3,000 lb
Fuel capacity, std	77 gal (72 gal usable) 462 lb (432 lb usable)
Oil capacity	12 qt
Baggage capacity	200 lb, 24 cu ft
Performance	
Takeoff distance, ground roll	1,000 ft

Takeoff distance over 50-ft obstacle	1,350 ft
Max demonstrated crosswind component	17 kt
Rate of climb, sea level	965 fpm
Max level speed, sea level	148 kt
Max level speed, 6,000 ft	146 kt
Cruise speed/endurance w/45-min rsv, std fuel (fuel consumption)	
@ 75% power, best economy	144 kt/4.9 hr
9,000 ft	(81.6 pph/13.6 gph)
@ 65% power, best economy	139 kt/5.6 hr
12,000 ft	(70.8 pph/11.8 gph)
@ 55% power, best economy	128 kt/6.4 hr
14,000 ft	(60.6 pph/10.1 gph)
Service ceiling	17,900 ft
Absolute ceiling	19,000 ft
Landing distance over 50-ft obstacle	1,720 ft
Landing distance, ground roll	820 ft

Limiting and Recommended Airspeeds

V _x (best angle of climb)	73 KIAS
V _y (best rate of climb)	85 KIAS
V _a (design maneuvering)	124 KIAS
V _{fe} (max flap extended)	102 KIAS
V _{no} (max structural cruising)	137 KIAS
V _{ne} (never exceed)	173 KIAS
V _{s1} (stall, clean)	65 KIAS
V _{so} (stall, in landing configuration)	56 KIAS

All specifications are based on manufacturer's calculations. All performance figures are based on standard day, standard atmosphere, sea level, gross weight conditions unless otherwise noted. □