

[News and Video](#) > [All News](#) > **Piper Saratoga II TC**

Piper Saratoga II TC

Tame Turbo

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[Saratoga II TC is New Piper's ultimate piston single](#)

Since 1965, Piper's basic PA-32 airframe has served as one of the most popular heavy-haulers in general aviation's piston-single fleet. With a good blend of useful load, cabin comfort, speed, and the access afforded by those huge aft double-doors, these airplanes have hit the spot with more than 6,700 customers. The latest incarnation of this airplane — The New Piper Aircraft Inc.'s Saratoga II TC — keeps this tradition alive.

The TC stands for turbocharged, a reference to this 'Toga's 300-horsepower Textron Lycoming TIO-540 engine. Its turbocharger uses an automatic wastegate controller. In practical terms, this means that the II TC's turbocharger operates almost transparently. For takeoff, simply apply full throttle; the wastegate automatically limits manifold pressure to the 38-inch, maximum allowable limit. In the climb, the automatic wastegate holds the manifold pressure to the 38-inch limit. In cruise, once power is set the manifold pressure remains at the selected value. There are none of the airspeed- and rpm-induced manifold pressure excursions so common to older manual or fixed wastegate systems. This automatic control of the turbocharger wastegate (a valve that routes varying amounts of exhaust air through the turbocharger's turbine wheel, which in turn increases manifold pressure) makes the II TC easy on turbo-neophytes.

That said, it's still important to emphasize the traditional turbocharger cautions. Automatic wastegate control is great, but to avoid the big turbo no-no — overboosting manifold pressure (and therefore cylinder pressure) limits — smooth throttle application is strongly advised. Slamming the throttle to the firewall during takeoff could cause a surge past manifold pressure redline, and the result could be damaged internal engine components.

The New Piper offers a nonturbocharged Saratoga — the Saratoga II HP — but it's not as big a seller as the turbo model. In 2001, for example, New Piper reported deliveries of 22 HPs. In contrast, 68 TCs went out the door. This in spite of the turbo's \$472,200 standard-equipped price.

Topping Off a 'Toga

[Popular options for the Saratoga II TC](#)

Air conditioning	\$10,685
Built-in oxygen system	\$7,965
Altitude alerter	\$3,990
Copilot electric pitch trim	\$1,795
Copilot instruments	\$7,865
Goodrich Skywatch and WX-500 Stormscope	\$35,035

The turbo Saratoga's traditional competition — Raytheon's Beechcraft B36TC Bonanza — offers 200-knot cruise speeds and slightly less useful load than the Saratoga. But at an average-equipped price of some \$665,000 it's way out of the running for many new-airplane shoppers. Raytheon delivered 26 new B36TCs in 2001. This year Raytheon plans to deliver five B36TCs, and the company says that the model's future is uncertain.

The whole idea behind turbocharging is to improve performance at higher altitudes. The Saratoga TC turns in a consistent 175 kt at 11,500 feet — a popular cruising neighborhood because oxygen isn't required by regulations. That represents a high-speed cruise condition, with manifold pressure set at 33 inches, propeller rpm set at 2,400 rpm, and a fuel burn of

some 20 gph. New Piper says that the TC can do 185 kt at 15,000 feet.

While the Saratoga TC may lag a few knots behind the B36TC, speed isn't everything. Many pilots have found the Saratoga line to be among the most stable, forgiving, and docile big singles on the market. Its stall characteristics are benign, the airplane has great lateral stability, and it rides turbulence in an admirable fashion. This all adds up to a wonderfully stable platform for instrument flying. It's as close to a hands-off, ride-on-the-rails airplane as you can find. And for a 300-hp airplane it's remarkably quiet, too.

Step into the cockpit and there's a definite big-airplane feel — something you'd expect from a 3,600-pound six-seater. In flight the controls are a tad heavy — again, something you'd expect — but that same heaviness is what makes the airplane stay put during instrument approaches. The cockpit is roomy, and the panel has a very upscale look to it, what with the standard Garmin/S-Tec avionics package. This includes a Garmin GNS 530/430 setup, the S-Tec System 55 dual-axis autopilot, a slaved horizontal situation indicator (HSI), and a flight director. Leather seats are also standard, with the pilot's seat having inflatable lumbar support.

What New Piper calls a digital display-monitoring panel (DDMP) sits atop a dual vertical stack of engine instruments. The DDMP lets you select any number of engine parameters by means of a rotary switch. Fuel status, electrical system, power setting (expressed in percentage of maximum horsepower), and engine vital statistics all can be displayed on the DDMP. The percent-power mode is especially handy in setting power. For example, simply adjust manifold pressure, rpm, and mixture until you see 75-percent power on the DDMP, and you're there.

The turbine inlet temperature (TIT) gauge is an important one. It measures temperature at the input side of the turbocharger, and it's redlined at 1,650 degrees Fahrenheit. Stray above it and you risk damage to both turbo and engine. Unlike the automatic wastegate's control over manifold pressure overboosts, the turbocharger has no fail-safe mechanisms to protect it against overtemps. That's the pilot's job.

Back in the 1970s, when thousands of Saratogas were sold, a popular magazine ad showed a baby grand piano being loaded into a Cherokee Six (the Saratoga's predecessor, and the first in the PA-32 line). It was an unusual sight, and yes, you could squeeze a baby grand through those aft doors, and yes, it would fit in the cabin. That same roomy cabin marks today's Saratogas, but now the interior is plusher than the red-velvet look of the disco days. You might still be able to stuff a piano in a new Saratoga, but with all that leather trim you'd think twice — and you'd certainly have to remove the seats.

With a little practice, flying the Saratoga is a breeze. You may have to crane your head a bit to see over that huge snout (which has a forward baggage compartment) during ground operations, but that's something you get accustomed to. Rotate at 80 kt, climb out at 95, and make sure you have 80 to 90 kt on final approach. Cross the fence, close the throttle, let the airspeed bleed off to 70 kt over the numbers, hold the nose off, and you'll arrive in style.

New Piper provides three days of simulator-based pilot training with the purchase of each new Saratoga. Those new to complex aircraft often opt to fly with a flight instructor or seasoned high-timer for the first year of ownership — to gain valuable experience and make a safe, orderly transition to solo operations. That's a particularly good idea when stepping up to an airplane like the TC. Which brings us to what must be the only sore point in the Saratoga's history.

Plug "Piper Saratoga" into an Internet search engine and there it is: John F. Kennedy Jr.'s fatal crash of July 16, 1999. In their ignorance — and eagerness to fix blame — some news commentators were quick to pounce on a few key words. The Saratoga is a complex, high-performance airplane, they kept emphasizing, and in a way that betrayed their unfamiliarity with aviation terminology. Certainly this intricate speed demon must have been a big factor in the accident's cause.

The fact is that Saratogas — even Saratoga II TCs — are, relative to some other comparable makes, extremely well-mannered. Yes, they do fall within the definition of a complex, high-performance airplane. As such, they demand that their pilots be well-trained and proficient; you could say that of all airplanes. Kennedy didn't have an instrument rating (something that all pilots of larger, capable singles like the Saratoga should have); flew into a dark, hazy night devoid of visual references over Long Island Sound; and entered unusual attitudes. The National Transportation Safety Board determined that Kennedy lost control of his airplane because of spatial disorientation. That wasn't the airplane's fault.

In the aftermath of the Kennedy accident, insurance companies began to raise their requirements for Saratoga coverage. Generally speaking, they want to see 250 hours total time, an instrument rating, and 75 hours in type before insuring a Saratoga pilot for solo flight.

"I see two basic types of Saratoga TC customers," says Gary Saunders, president of Columbia Aircraft Center, a Groton, Connecticut, New Piper dealership. "One is the high-time pilot. Maybe he's been flying turboprops like the [Piper] Cheyenne but now he doesn't want or need that kind of complexity anymore he remembers his old, faithful friend, the Saratoga, the one he used to fly a while back. And he wants to go back to that it's kind of like that for the new Archers, too.

"The other customer, believe it or not, is the new pilot. They want to skip right past the smaller planes and go right to the airplane they want to ultimately fly. They get their instrument ratings, then hire a pilot to fly with them for six months or a year while they learn the ropes."

The Saratoga II TC is an important airplane in The New Piper's product mix. A step-up program lets Warrior and Archer owners trade up to a Saratoga at a preagreed price, and Saratoga owners can do the same if they decide to move up to a Mirage or Meridian. The Saratoga bridges the gap between New Piper's piston and pressurized models and, as always, serves as an uncomplaining, stylish hauler for both the owner-flown and charter markets.

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SPEC SHEET

New Piper PA-32 Saratoga II TC Standard-equipped price: \$472,200

Specifications

Powerplant	Textron Lycoming TIO-540-AH1A, 300 hp
Recommended TBO	2,000 hr
Propeller	Hartzell three-blade, constant speed, 77 to 78-in dia
Length	27 ft 10.5 in
Height	8 ft 6 in
Wingspan	36 ft 2 in
Wing area	178.3 sq ft
Wing loading	20.2 lb/sq ft
Power loading	12 lb/hp
Seats	6
Cabin length	10 ft 4 in
Cabin width	4 ft
Cabin height	3 ft 6 in
Standard empty weight	2,465 lb
Max takeoff weight	3,600 lb
Max ramp weight	3,615 lb
Max useful load	1,135 lb
Max payload w/full fuel	523 lb
Fuel capacity	107 gal (102 gal usable)

Baggage capacity	Forward 100 lb, 7 cu ft Aft 100 lb, 17.3 cu ft
Performance	
Takeoff distance, ground roll	1,110 ft
Takeoff distance over 50-ft obstacle	1,810 ft
Max demonstrated crosswind component	17 kt
Rate of climb, sea level	950 fpm
Cruise speed/range w/45-min rsv, std fuel (fuel consumption)	
@ High-speed power, Peak TIT, 10,000 ft	176 kt/750 nm (20 gph)
@ Long range power, Peak TIT, 16,000 ft	160 kt/955 nm (12.5 gph)
Max operating altitude	20,000 ft
Landing distance over 50-ft obstacle	1,700 ft
Landing distance, ground roll	880 ft

Limiting and Recommended Airspeeds

V_R (rotation)	80 KIAS
V_Y (best rate of climb)	
Gear down, flaps up	81 KIAS
Gear up, flaps up	95 KIAS
V_A (design maneuvering)	134 KIAS
V_{FE} (max flap extended)	110 KIAS
V_{LE} (max gear extended)	132 KIAS
V_{LO} (max gear operating)	
Extend	132 KIAS
Retract	110 KIAS
V_{NO} (max structural cruising)	167 KIAS
V_{NE} (never exceed)	191 KIAS
Final approach speed, full flaps	80 KIAS
V_{S1} (stall, clean)	67 KIAS
V_{SO} (stall, in landing configuration)	63 KIAS

For more information, contact The New Piper Aircraft Inc., 2926 Piper Drive, Vero Beach, Florida 32960; telephone 772/567-4361; fax 772/770-2237; or visit the Web site (www.newpiper.com).

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.

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