

# The T-28

## INSIDE A Warbird WORKHORSE

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**W**hen the designers and engineers at North American Aviation were asked to create a new trainer for the United States Air Force, they faced a dilemma. Not only were they tasked with creating an airplane that would teach cadets how to fly before they were allowed to fly the new jet-age fighters coming online, but also they were asked to create a design that would replace the venerable AT-6 Texan trainer, affectionately known as “the pilot maker.”

To say these designers had big shoes to fill was an understatement. But in September of 1949 the employees of North American Aviation breathed a collective sigh of relief when the tricycle-gear behemoth known as the XT-28 Trojan took to the sky.



#### Evolution

The first T-28s off the assembly line were given the official designation of T-28A. These models used the 800-hp Wright R-1300 engine along with a two-bladed constant-speed propeller. The U.S. Air Force was the first user of the A model, and it quickly caught the attention of the U.S. Navy, which was looking for an airplane to replace its SNJ tailwheel trainers.

After the Navy evaluated the T-28A, North American Aviation Corporation made a few changes and came up with the T-28B. This new model had more “get up and go” with a Wright R-1820 1,425-hp engine spinning a three-bladed propeller. The cowling design on the B model also changed to accommodate the larger engine along with the addition of a speed brake and smaller canopy.

The Navy liked the B models so much it decided that it would like to welcome them aboard its aircraft carriers as well. North American Aviation answered the challenge and added a tail hook to the T-28, resulting in the C-model designation.

By the time the Vietnam War was in full swing, the T-28A was highly modified to handle the fierce frontline combat duties of jungle warfare. With the addition of armor plating, the switch to the Wright R-1820 engine, and the addition of machine guns and hard points, the T-28D was born.

Both the Air Force and the Navy made heavy use of this new trainer in the 1950s and beyond. The Air Force believed that because the new jets had tricycle landing gear, training aircraft should have the same. The Navy respected the Trojan so much that it stayed in its inventory until 1984. More than 1,900 T-28s of various models were produced by North American Aviation during the 1950s and early 1960s, and more than 300 fly today in the United States, Canada, Australia, New Zealand, and France.

#### To Tame a Trojan

Standing more than 12 feet high with a wingspan of more than 40 feet and weighing in at 8,600 pounds gross, the T-28 is no Cessna 150. But what it does have in common with the C-150 is that it was built with the student pilot in mind. Some of the seasoned T-28 drivers claim that one of the greatest attributes of the T-28 is that it is easy to fly. But this same cadre of fliers will also remark that the T-28’s worst characteristic is that it’s easy to fly, but hard to fly right!

To operate this veteran trainer correctly you need to understand its operating systems and procedures as if you were a new cadet. According to the folks at Courtesy Aircraft Sales in Rockford, Illinois, a worldwide seller of T-28s and other warbirds, an FAA T-28 type rating is required with the prerequisite of a private pilot certificate and a minimum of 500 flight hours. Courtesy not only will sell you a T-28 but also will teach you the ins and outs on how to care for and fly it. Complete pilot checkout times average between six and 10 hours, depending on the pilot’s proficiency.

#### Flying the T-28

With a big, fat laminar flow wing, the T-28 is relatively light on the controls. It will stall around 70 knots with fingertip guidance and is fully aerobatic with a plus 4.5g and minus 2g load. With a big, round Wright Cyclone engine spinning a Hamilton Standard Hydromatic three-bladed constant-speed propeller, the T-28 really gets up and goes. So much so that its ground roll is around 800 feet, and with a climb rate of more than 3,000 feet per minute, the Trojan will outclimb a P-51 Mustang all day long!

However, if you’re looking for something economical to putter around the sky, then look elsewhere. With a fuel capacity of more than 177 gallons and a fuel burn rate of 50 gallons per hour at a normal cruise setting of 235 mph, you can plan on leaving a gigantic carbon footprint.

But don’t let the T-28s size intimidate you. With two roomy cockpits, excellent visibility, tricycle landing gear, huge flaps, and superb flying characteristics, this brute is actually a sweetheart when it comes to flying. Remember that it was built with a flight-training mindset, and it has proved what a rugged workhorse it can be. Even the maintenance and parts availability is a nonissue as plenty of technical support is available around the country. Maintenance facilities report that each annual takes about 50-60 hours of labor, assuming that your T-28 has been cared for well.

There are also several insurance underwriters who aggressively offer coverage at a competitive rate, which offers more bang for your buck when it comes to hourly operating costs.

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#### DISTINGUISHED SERVICE

During its career, the T-28 not only trained future jet jockeys but also served with distinction as the T-28D in Southeast Asia as a ground attack fighter. It earned high respect from a clandestine group of pilots known as the Ravens, who used it with success against the invading North Vietnamese in Laos.

In the mid 1960s, the Ravens assisted the Laotian army and air force with tactical air power that included the Cessna U-17 (185), the O-1 Bird Dog, and the heavy-hitting T-28. The Raven pilots had lots of experience as forward air controllers in Vietnam during their tenure with various military branches. To become a Raven, servicemen had to don civilian clothes. Officially, there were no Americans flying military aircraft in neutral Laos.

The Ravens operated under a program named Steve Canyon, a cartoon of the era. With their T-28s loaded with bombs, rockets, machine guns, and napalm, the Ravens flew from primitive airstrips day and night in all kinds of weather. They flew over either thick jungle canopy that concealed the threat below, or mountainous terrain, where it was next to impossible to walk away from a forced landing. Operating at tree-top level and flying a much slower aircraft compared to their jet counterparts, the Raven T-28s strafed and bombed North Vietnamese targets.

The Raven-flown Trojans withstood intense ground fire. Many were able to complete their mission and limp back to base, only to be patched up and flown the next day. Others were not so fortunate; the Ravens suffered the highest casualty rate of this Indochina war.



Operating in the Experimental Exhibition Category Because T-28s are registered in the experimental exhibition category, they must submit an annual program letter that advises their local FAA Flight Standards District Office (FSDO) where they plan to exhibit their

aircraft that calendar year. The owners/operators may modify that list of events any time by simply notifying their local FAA FSDO by fax, e-mail, or letter prior to going to an event. The FAA FSDO does not have to approve or concur with the list of events listed in the annual program letter or any changes to it. The FSDO simply must have that information on file in their office.

#### Safety and Engines

Mark Clark of Courtesy Aircraft Sales says the T-28 is a great aircraft for civil aircraft operators. When it comes to safety, he says, “The T-28 is no different. If you remove low altitude, unplanned aerobatics, and scud running/VFR to IFR-type accidents, the T-28 has no real issues.” And that is across all models (A, B, C, D), he notes.

In regards to engine failures, Mark highlights three problem areas. “When the majority of the big engine T-28s came onto the market in the early 1980s, they had not been out of service for that long of a time,” Mark says. “These aircraft did pretty well when properly pre-oiled and operated.” He notes that the flying habits of the civilian community differed from that of the military, which flew these aircraft daily. “The Wright engine, due to design, does not hold oil around the master rod



**Make & Model:** North American Aviation T-28C **Certification:** Experimental-exhibition  
**Length:** 32 feet, 9 inches / **Wingspan:** 40 feet, 6 inches / **Height:** 12 feet, 7 inches  
**Maximum Gross Landing Weight:** 8,600 pounds / **Fuel Capacity (gallons):** 177 / **Seats:** 2  
**Powerplant Make & Model:** Wright Cyclone R-1820-86 / **Horsepower:** 1,425  
**Propeller:** Hamilton Standard Hydromatic three-blade, constant-speed  
**Cruise Speed:** 235 knots indicated airspeed / **Fuel Consumption:** 50 gallons per hour  
**VNE:** 340 knots indicated airspeed / **VSO:** 59 – 67 knots indicated airspeed  
**Cost:** From \$165k to \$330k for recently restored. **More info:** [www.CourtesyAircraft.com](http://www.CourtesyAircraft.com)

bearing in a static condition as well as a Pratt. Pre-oil is very important.” Proper operation and power control is also important, he says. “If the operators avoid reverse loading of the engine, it makes a big difference. Carb flow rates and mag issues are something the civil operator needs to be aware of.”

A second source of engine failures stemmed from the sale of a large number of old military engines sold as surplus and placed into service without proper inspection or knowledge of their history, Mark says. “They had been pulled for a reason, and without opening them up it was hard to tell why. The failure rate of these was not very good.”

Mark also notes a stretch of a few years where civilian overhaul shops used defective master rod bearings during overhauls, which failed once they were put into service.

These three problem sources have been addressed over the years and aren’t likely to be found in aircraft on the market today. As with any aircraft purchase, however, you’ll want to be sure to see maintenance logs and collect as much of the aircraft’s operating history as possible, keeping an eye out for any of these kinds of failures in the aircraft’s past.

#### Right for You?

If you’re undecided about writing a check for a T-28 until you have done some research, then you’ll want to contact one of the numerous organizations that can help, including EAA



Herb Baker, EAA 10301, of West Bend, Wisconsin, operates a T-28C and notes that keeping a clean engine is key to quickly identifying when and where leaks appear. The photo on the right shows an access hole in the T-28’s firewall, providing a mechanic easy access to major components located behind the engine.



Warbirds of America ([www.Warbirds-EAA.org](http://www.Warbirds-EAA.org)) or the North American Trainer Association (NATA) at [www.NorthAmericanTrainer.org](http://www.NorthAmericanTrainer.org). NATA is dedicated to the North American Aviation purists and will answer a variety of questions about the T-28 including engines, flight teams, formation flying, insurance, maintenance, markings, propellers, restorations, training, and more. The organization offers a quarterly magazine entitled *NATA Skylines*.

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Before you write a check, make sure you consider a few facts about its care and feeding. Getting checked out in a T-28 should not be a problem as there are many type-rated examiners across the country who can easily assist you in getting your experimental aircraft authorization needed to fly this aircraft. However, you should first examine your pilot skills and make sure you meet the qualifications of flying a complex airplane.



The T-28C carrier model.



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#### EXPERIMENTAL AIRCRAFT AUTHORIZATION

To operate a T-28 you must get training in type from an authorized instructor, then pass a check ride from an experimental aircraft examiner. If successful, the authorization is then added to your pilot certificate.

You may also want to make sure that you have plenty of cash on hand to feed this airplane. Plan on spending at least \$250 per hour—minimum—on fuel and oil alone (not to mention the cost of a pancake breakfast for you and your back-seater).

#### T-28s Today

With more than 300 T-28s flying worldwide today, there is an abundance of pilots and owners who are willing to help the prospective buyer understand the aura of the T-28. In fact, in the last few years there has been a resurgence of T-28s on the air show circuit. Whether it is flying formation with fellow warbird pilots, making smoke rings in the sky à la Herb Baker and *Ditto*, or even being part of the combined forces of six T-28s known as the Trojan Horsemen galloping across the sky wingtip to wingtip in an orchestrated aerial ballet, the T-28 is one graceful machine—even at 60 years old. *EAA*

An avid pilot and longtime contributor to EAA publications, **Jim Busha** is the editor of *Warbirds* magazine and the owner of a 1943 Aeronca L-3.