



BY SEAN ELLIOTT, EAA 520258

# Flying the Queen of Vintage Transports

## The Ford Tri-Motor

“What’s it like to fly the Ford?”

This is perhaps the most commonly asked question about the Tin Goose. Contrary to what some people spout, it is not like flying a J-3 Cub! The Ford Tri-Motor Model 4-AT is an amazing vintage transport that is incredibly capable, yet demanding of certain pilot skills. It typifies traits long associated with flying vintage aircraft such as a Stinson SM-8A or Ryan Brougham, all of which share the same lack of stability and demand constant use of the rudder.

The Ford Tri-Motor also has a unique side that must be fully understood before any pilot can competently master it. Because the Ford is a multi-engine machine, differential thrust is always in play and can add a whole new dimension to aircraft control during takeoffs and landings. Sounds both challenging and fun, doesn’t it? It is.



Retired Eastern Airlines pilot Ernie Schnack (L), and Tri-Motor pilot Sean Elliott. Schnack showed up for his ride in his Eastern Airlines captain's uniform. He said his very first airplane ride was in a Ford Tri-Motor.

**Shall we go flying?** First on the list is getting acquainted with the flight deck. Entering the cockpit, you notice the lack of ergonomics in its layout. Want to check the No. 1 and No. 3 engines? You have to look outside at the engine mount area just above the tube with the oil cooler. Back inside, you will notice the mixtures are mounted vertically (in the center pedestal), and the throttles are on top of the center pedestal. The control wheel is actually a circular wheel from a Ford Model A automobile.

Nothing feels standard about the cockpit, but you do grow to like it. With experience, you develop a flow that works well for both pre-takeoff and pre-landing checks. All in all, the 4-AT lends itself nicely to single-pilot operations. (At less than 12,500 gross, it does not require a type rating.)

Taxiing is simplistic and easy. Perfectly matched disc brakes (thanks to the EAA restoration) make ground handling a breeze. Visibility is amazingly good for a taildragger, and differential thrust makes you look like a pro in turns on the ground. Two cautions—first, remember how long the tail actually is. When maneuvering in tight quarters, it is easy to pivot tightly and whack something with the tail. Second, always be mindful of that huge wing and the massive lift it is capable of. Disciplined use of aileron wind correction for every direction of taxi is a must. To summarize, the Ford Tri-Motor is one of the simplest large taildraggers to taxi.

Takeoff is always fun. You have plenty of horsepower (excess thrust) and can easily be airborne in four to five airplane lengths if desired. That being said, the Ford is still a large, mass-oriented tailwheel airplane. The rudder is fairly small and largely blanketed in the three-point stance. That means that during takeoff you will have little to no effectiveness with rudder control due to other parts of the airframe blocking the airflow across the rudder. Once the pilot

raises the tail during the takeoff run, that problem goes away. Paying close attention to directional control on each and every takeoff is critical. Just like a DC-3 or B-17, the airplane has powerful ailerons that generate a lot of adverse yaw, requiring that you always roll the ailerons into the crosswind for proper correction. In addition, “walking” the outboard throttles up—rocking all three throttles to the left and to the right with your wrist, depending on directional control needs—when you add the power is also important. This will help offset the blanked-out rudder until the tail is raised. The Ford is quite capable of handling a 25-knot direct crosswind on takeoff when in the hands of an experienced pilot who understands the ballet dance of rudder, aileron, and differential throttles all at once.

In flight, the Tri-Motor is a slow, docile, 90 mph vintage experience. The airplane has a “wallow” that can only be associated with 1920s aerodynamics. By the 1930s aircraft engineers had pretty well figured out how to design an airplane that was more stable about the yaw axis. Every turn of the Ford requires more rudder than aileron. Rudder input is required 100 percent of the time. From a stability standpoint you will find that the roll is completely neutral (no surprise there with the zero dihedral wing), and pitch and yaw are mildly positive. Turn rates are the big story here. Making a turn is slow and methodical. You have to think ahead of the airplane as though you are flying something modern that is traveling at 200 knots.

Approach and landing is where you demonstrate your prowess as a Ford pilot. A well-planned, stabilized approach is a must. It does not react well to rapid changes. Pull all the power off early to correct a botched approach and you may find yourself in a sink rate that mirrors the space shuttle. A smooth, precise transition with constant thought to directional control and crosswind is the right way to do it. Fly the airplane to the end of the runway every time!

During the flare and landing, the airplane prefers a well-controlled wheel landing, flying the tail down to the ground after the mains are on. Throughout the transition and touchdown, the same flurry of activity required



### Human factors was an unknown science when the Ford Tri-Motor was designed in the mid-1920s. Control wheels came directly from Ford Model A automobiles.

during takeoff is needed. Did I mention the Ford weighs 10,000 pounds? This airplane, like any large taildragger, will take you for a ride if you let it get away from you. Many of you just said, “Well, so will my Luscombe, or Cub, or Pitts.” While that is certainly true, the difference is that the mass of this airplane means that if it does swerve, it takes an act of God to stop it once it starts in earnest. The Cub or the Luscombe will generally come right back with aggressive correction. A “feel” for good crosswind correction is a must in this aircraft, but it is still fun to fly!

The Ford Tri-Motor is a true time machine that gives you a greater appreciation for the line pilots of the 1920s and 1930s who operated these wonderful machines every day. What an era! No GPS, no glass flight display, just the drone of three marvelous radial engines and the crosswind awaiting your next landing! I have yet to see a Garmin G1000 display that will come anywhere close to that experience. Maybe it is in these basic elements of true airmanship that pilots find the meaning of why we take to the sky.

#### DO IT YOURSELF!

Hitching a ride in a Ford is one thing, but adding a type rating to your certificate is a different. If you meet the minimum requirements (private pilot certificate, instrument and multiengine ratings, tailwheel endorsement, and third class medical), you can reserve a spot in Grand Canyon Valle Airport's Ford Tri-Motor type-rating program. A pilot-in-command type rating starts at \$10,900 and includes four hours of dual flight instruction, an hour of flight time for the checkride, and up to three nights of hotel accommodations. A second-in-command experience will cost \$2,900 and does not require a checkride.

For more information on the program and course availability, visit [www.FordTypeRatings.com](http://www.FordTypeRatings.com) or call Bryan Godlove at 253-468-8606.



**UPPER:** This 1927 image shows five Tri-Motors in various stages of assembly. Ford used the same pioneering assembly line techniques he used on his automobile, and applied them to his airplane.

**LEFT:** Stout's 2-AT Air Pullman could carry six passengers and dual controls. Note the open cockpit with a windscreen. Henry Ford is the sixth from the right.

**RIGHT:** The 3-AT was described as a monstrosity or worse by those who saw it. The open cockpit gave the pilot an excellent view of the sky, but not much for landing. The gondola-shaped fuselage and hanging engines destroyed most of the airfoil's lift, causing stalls when the throttle was retarded.



The story of Ford's Tri-Motor begins with William Bushnell Stout, who worked for the Packard Motor Car Company as the chief engineer of its aircraft division. Stout had limited success with his early designs, and he caught Ford's attention.

Stout's first design was a three-passenger monoplane made of wood and powered by a 90-hp OX-5 engine. His next design was built around the water-cooled 400-hp Liberty engine, the most powerful available at the time. Called the 2-AT Air Pullman, it was a high-wing monoplane built entirely of corrugated duralumin, and Ford ordered several. On April 13, 1925, 2-AT, *Maiden Dearborn*, left Detroit for Chicago. It was the first flight of the Ford Air Transport Service, inaugurated by Ford to transport auto parts, company mail, and executives to his Chicago plant, and it was the first Stout airplane to have the Ford emblem on the fuselage.

Not completely satisfied with the 2-AT, Ford directed Stout to build a larger airplane with three engines. The new 3-AT was hideous and was labeled a monstrosity by several observers. Test pilot R.W. "Shorty" Schroeder almost crashed it on landing. His report to Ford convinced him he had a lemon.

A mysterious hangar fire the night of January 17, 1926, destroyed the 3-AT and Stout's previous designs. Stout was sent on a speaking tour to promote aviation, and a new group was formed to design a new tri-motor, the 4-AT Tri-Motor. Affectionately called the "Tin Goose," it was a vast improvement, and just what Ford was looking for. On June 11, 1926, it made its first flight. It would go on to plant the seeds for the commercial airline network in the United States. More than 100 airlines flew the Ford Tri-Motor in North America, Central America, South America, and elsewhere. Dozens of private companies used it for executive transportation, sales, promotions, and freight.

Ford built 189 4-AT and 5-AT Tri-Motors.

#### EAA'S TRI-MOTOR

Ford Tri-Motor 4-AT-69, N8407, made its first flight on August 21, 1929, and sold for \$42,000 to Pitcairn Aviation's passenger division, Eastern Air Transport, whose paint scheme is on EAA's Tri-Motor. In 1930, Cubana Airlines bought it for service in Cuba.

It reappeared on the U.S. register in July 1949 and was used for barnstorming, as an air tanker in fighting forest fires, as a smoke jumper, and crop sprayer. In 1966, Dale Glenn brought N8407 to the EAA convention in Rockford, Illinois. The Tri-Motor became a regular fixture at subsequent conventions.

On June 16, 1973, the Tri-Motor was at the third All-American Air Show benefit for the EAA Air Museum in Burlington, Wisconsin. A sudden, violent thunderstorm with heavy rains and 75 mph winds hit the field. Twelve aircraft were damaged or destroyed, including the Ford. The large wing of the aircraft generated so much lift that its tiedowns tore from the ground, and the aircraft lifted into the air before crashing on its nose and splitting in half when it landed on its back.

"I thought it was the death of another great airplane," EAA Founder Paul Poberezny said. "As we surveyed the scene after the tragedy...the thought occurred to me that here was a real challenge to save a priceless bit of aviation history. When the representative of the insurance company indicated that bids would be taken for purchase of the remains, I submitted our figure. It was accepted and EAA had a Ford Tri-Motor!"

#### RESTORATION

Next began a long, challenging, and expensive task of rebuilding the airplane. EAA staff, volunteers, and Ford Tri-Motor operators nationwide pitched in. But parts and airframe materials were scarce. A Save the Ford fund was established, and the search began for parts.

BY HENRY M. HOLDEN, EAA 427388

# Ford Tri-Motor History

**In the mid 1920s**, air travel in the United States was not popular. Considered downright dangerous, its commercial future was bleak. The wood and fabric planes were underpowered and prone to mechanical failure, and there were few aids for night flying.

Henry Ford had put America on wheels, and soon he was giving thousands of people their first airplane ride. The Ford Tri-Motor rattled, shook, and made a deafening noise to those onboard, but it was a quantum leap in technology over other airplanes of the day. Air travel in America was inevitable, but Ford accelerated its acceptance by years.



#### Silver Screen Star

N8407 has appeared in two movies, starting first in the 1965 movie *The Family Jewels*, with Jerry Lewis. Recently, N8407 returned to the silver screen in *Public Enemies* with Johnny Depp and Christian Bale. A portion of the film was shot at Pioneer Airport, as well as parts of downtown Oshkosh and Wittman Field.

## CHAPTER 1247'S TRI-MOTOR

EAA Chapter 1247, in Port Clinton, Ohio, is currently replicating a 5-AT (the larger Tri-Motor) and used an existing fuselage as a template for its jig. "We used new material, and after six years of EAA volunteer work, we have the fuselage complete. We are looking forward to beginning the skin work," Warren Cernack, the chapter's project coordinator, said.

### In This Photo:

Front (L-R): Warren Cernack, Lisa Benjamin

Middle (L-R): Steve Foraker, Michael Foster, Lloyd Dayton, Jim Herner, Gil Stuber, Don Senne

Back (L-R): Ken Benjamin, Dave Hirt



In early 1975, a Ford fuselage and center section were discovered in Nicaragua. While the fuselage was too corroded to be reused, it served as a pattern to construct a fuselage jig. In April 1980, restoration work officially began.

By 1984, work was progressing under the guidance of airframe and powerplant mechanics Tom Soerens, Ted Mosman, and volunteers. The pilot's cabin and forward cockpit became a total rebuild along with most of the controls with their rods and cables.

The engines were another challenge. The left engine was repairable; the nose engine, crushed when it hit the ground, was unusable and replaced with an overhauled engine from Poberezný's Beech 18. The right engine was in good condition.

The two wing panels required more time to build and install the 22 rib trusses in each panel. Only when the two were bolted to the center section did the scope of the size of the airplane and the project become apparent. Finally, the interior was restored to an authentic 1929 cabin with original light fixtures and ribbed flooring from original Ford material.

On July 20, 1985, the Tin Goose rose gracefully into the Wisconsin sky, just a week before EAA's annual convention. Twelve years of colossal efforts and thousands of volunteer hours reached a finale when EAAers had their first opportunity to see the Tri-Motor. On May 18, 1986, the Ford made its first official fly-by at the EAA Aviation Center's Pioneer Airport.

### AERIAL AMBASSADOR

Every year, EAA's Tri-Motor tours the country. In 2008, the Ford flew approximately 4,100 passengers at its stops, and more than 1,800 passengers took flight during EAA AirVenture.

Denny Carney, president of EAA Chapter 122 in Harrisburg, Pennsylvania, sees the Tri-Motor both connecting people to our aviation heritage and boosting chapter membership.

"When I was elected president in 2002, we had \$26 in the kitty and eight members," Carney said. "In 2006, the first time the Ford visited us at Capital City Airport (CXY), in New Cumberland, Pennsylvania, we sold 787 rides in three days. Today we have \$10,000 in the kitty and close to 100 members. We built the chapter with the Tri-Motor (and the B-17) tour stop. The Ford has visited us three times, and each time we see a bump in membership."

EAA also uses the Ford Tri-Motor to give youngsters their first flight and become Young Eagles.

Seven volunteer pilots fly the Ford, and Sean Elliott, EAA director of aircraft operations, has flown about 800 hours in the Tin Goose. Over time, he has made several observations about his passengers.

"The first thing I see is the sheer excitement on their faces for something that is so rare, still airworthy, and flying," Elliott said. "They want to know more about the airplane and experience the time machine aspect of it when they go on a flight and get to feel what it was like in 1929. They are reliving history."

Some people make a personal connection with the airplane, Elliott said.

"I had one gentleman, a retired Eastern Airlines captain, show up in his full uniform. He bought the copilot's seat and flew the flight with me. He was smiling the whole flight. There was a direct connection for him as an Eastern pilot, and he told me his very first plane ride as a kid in the 1930s was in a Ford Tri-Motor." *EAA*

For a photo gallery, video, and more information on where you can see and fly in EAA's Ford Tri-Motor, visit [www.SportAviation.org](http://www.SportAviation.org).

# FP AD