ERCOUPE – THE SAFETY PLANE

version 022525

STICK AND RUDDER An Explanation of the Art of flying

\VOLFGANG LANGEWIESCHE

Stick and Rudder was the best book I read in my ground training, since I didn't have time for formal "ground school." These brief selections give testimony to Langewiesche's clear understandings and explanations of flight. These relate to the "rudder" – and especially describe concepts important for the Ercoupe, designed by Langewiesche's close friend, Fred Weick.

pp. 185-6

The Wright brothers knew what the rudder is for. They had the whole airplane figured out much more brilliantly even than most people realize even now. They knew that an airplane could not be successfully turned by rudder but would have to be turned by leaning it into a bank and lifting it around with the flippers. Their first glider didn't have a rudder! But they also soon discovered the adverse yaw effect: when their first attempt to bank to the right produced a turn to the left, and a crash. The Wrights then fitted a rudder; but they understood the nature of the rudder better than most airmen have understood it since. They knew that it was merely a device for counteracting the adverse yaw effect. They hitched their rudder up mechanically with their aileron control. Thus giving aileron to the right would automatically always be accompanied by right rudder: aileron to the left, by left rudder; aileron in neutral, neutral rudder. What we now call "coordination of stick and rudder... what we spend tedious hours learning, and-as the accident record shows-never learn quite well enough, was reduced to a mechanical device' The latest trend is back toward the same idea. In the modern safety airplane, pioneered most successfully by Fred E. Weick, the rudder is once more hitched up mechanically with the same steering wheel that also moves the ailerons-and once more there are no rudder pedals! Such an airplane has restricted flippers and thus cannot be badly stalled; hence it does nor need an independent rudder for control in stalls and spins; it has no "torque" and hence needs no independent rudder action merely to keep straight. It has a tricycle landing gear with steerable front wheels and hence needs no rudder for control on the ground. Because of its tricycle landing gear, it can afford to touch the ground in a cross - wind landing with some sideways drift; hence it doesn't need an independent rudder to produce sideslip. Whenever the pilot uses the ailerons in such an airplane, the rudder goes over at the same time. Whenever the pilot neutralizes his ailerons, the rudder, too, returns to neutral. Such a ship is built, then, on the clear-cut theory that the rudder's only purpose is to counteract the adverse yaw effect of the ailerons. And such an

airplane flies a perfectly coordinated turn and "coordinates" perfectly also in straight flight through rough air. In very fast flight, when the ailerons' adverse yaw effect is very slight, it may skid a little from slightly too much rudder action; in very slow flight, when aileron yaw is pronounced, it may yaw a little from insufficient rudder action. But experiment has proved that even the most expert pilot cannot in the long run "coordinate" as well as does such an airplane, and that he will occasionally produce skids or slips much worse than such a "two-control" airplane could possibly produce; and of course such an airplane's control action is infinitely better than that of the mediocre pilot or the scared pilot or the confused and tired pilot.

p. 219

It is amazing how comparatively well you can fly that way "mechanically." Flight instructors are usually horrified at the idea, but it is a fact that control coordination is fundamentally a mechanical problem and can be achieved by "mechanical" flying. Remember that "two-control" safety airplanes fly beautifully that way, by a perfectly mechanical linking of stick and rudder, really of aileron and rudder, so that they can always only move "both together." Of course, if you want to fly mechanically, you must understand the mechanism you are working; you certainly cannot fly mechanically if you don't understand your airplane.

p. 319

You notice that both methods require the use of a rudder. Hence the question, in regard to the rudderless safety airplane: "But what about cross-wind landings?" The answer is that on the stable tricycle landing gear, the airplane can afford to touch while "crabbing," that is, while moving relative to the ground in a sidling fashion. The resulting sideswiping sort of ground contact will simply give the landing gear a chance to show its stability. Consider once more our example, where the cross wind is from the left and the airplane's nose thus points to the left of where the airplane is actually going. The nose wheel, remember, is free to caster, and the ship's center of gravity is ahead of its main wheels. At the moment when the main wheels make their slightly sideswiping contact with the ground, the ship will cock itself sharply around toward the right until its nose points in the direction in which it is actually moving. And it will then move more or less straight ahead, with no tendency to ground-loop.

pp. 120-1

What has been said so far concerning the airplane's stability in the nose-up, nose-down sense has been an ideal picture, not a true picture. Very few airplanes, if any, actually behave quite so well: very few will actually fly, with the stick released, in straight flight, at constant speed regardless of power. The one ship that comes nearest the ideal is Fred E. Weick's Ercoupe, which is in so many other respects, too, a remarkable airplane. It may seem absurd to set up a standard of stability which practically no airplane can live up to; at first glance, it will seem so unrealistic as to be useless. But there simply isn't any other standard of stability. If the idea of stability (longitudinal stability) has any meaning, then it is this speed-keeping, (Angle of Attack keeping) tendency. There is nothing else, nothing but speed or Angle of Attack, you would even want your airplane to be stable about. If almost no airplane actually behaves as has been described, that simply means that we are not yet able to build completely stable airplanes. And even so, the idea of stability that has been presented is useful to the pilot. For as he gets into a new ship, this idea gives him a starting point from which to measure the new ship's characteristics: to what extent is the ship stable, and in what particulars does it fall short of perfect stability? If you can answer those questions about an airplane, you really know that airplane.

p. 343

The spin. At this point the pilot is bewildered. He is thinking not about a spin but wondering why that left wing won't come up and why the nose won't come up and is using all his strength pulling back on the stick-1 to 4, 4 to 8 seconds, 70 per cent of all fatalities. Only a minority in aviation understand or believe this story. But you fix the controls so that a pilot cannot do this to an airplane (Ercoupe, Skyfarer) and no one spins in.

pp. 176-8

The important thing to understand about the rudder pedals is that they are unnecessary; like your wisdom teeth, they serve. no very good purpose but can cause much trouble. The airplane needs no rudder pedals. It should have no rudder pedals. In all probability it will have no rudder pedals 10 years hence. Yet, as long as our airplanes have this control, it is most important to the pilot. It is the control that causes the greatest difficulty for beginners. Fully a third of an elementary course in flying is devoted (when you come right down to it) to teaching the use of the rudder, its proper "coordination" with the other controls. And even the more experienced pilot often has trouble using it correctly. In the typical fatal accident, which involves a stall and a spin, misuse of the rudder is almost always partly to blame-along with two other pilot errors already discussed, an elevator pulled back too far in an attempt to keep the airplane up, and a possible "stumble" over the ailerons.

As you might expect, there is a connection between the fact that the rudder control ought not to be on the airplane at all and the fact that pilots have so much trouble using it correctly.
And, once the airplane is in a spin, it is true that the rudder is an important help in getting it out. This is the main reason why the present-day airplane still has a rudder. The catch is, however, that there is no good reason why an airplane should ever be stalled, let alone why it should be allowed to spin. The spin has no utility whatever, not even as a combat maneuver of evasion. Airplanes can be made unstallable, and they can very successfully be made unspinnable by restricting the elevator travel and suitably designing the ailerons. And once the stall and spin danger is gone, this use of the rudder is also no longer essential. And so-the rudder has no real function in flying.

pp. 178-9

Your kid brother thinks that an airplane turns because the rudder is held over; he thinks that an airplane's rudder pedals do in the air- THE RUDDER 179 plane exactly what the steering wheel does in an automobile. Almost every beginning student has the same idea; and even quite a few experienced pilots still will tell you the same, though they don't actually fly that way. It's still in many books-what's worse, it is still being taught to kids in high schools! That idea is the worst single misconception about flying that is today still widespread. It is a curse. It causes more headache to student pilots than any other single thing in flying; almost every student wastes a lot of time because he can't figure out what to do with the rudder and when and why. It also kills more pilots than any other cause, save perhaps that other idiocy, the idea that pulling the stick back makes the airplane go up. Or rather, it is the combination of the tum-by-rudder fallacy with the up-by-elevator fallacy that is sure poison.

Langewiesche was a colleague and fan of Fred Weick, designer of the Ercoupe. As ERCO was nearing production for the Model 415, Weick asked his friend to write the "Pilot Operating Handbook" (a novelty then) for this unique non-spinnable airplane. Langewiesche was very apologetic: "Fred, I'd love to but I'm in the middle of a big writing project." That project, of course, was **Stick and Rudder,** published in 1943. In later years, Langewiesche noted that one major regret was not having written the POH for the Ercoupe, a design that he admired greatly. These details were shared with me in 2004 by a gentleman in California who lived next door to one of Langewiesche's younger relatives, who "took him in" in later years. At some even later time, Langewiesche moved to a local nursing home, where he "taught [my acquaintance] to fly" using a couple of chairs in tandem and a broomstick for the control yoke. This fellow was so excited that he actually enrolled for flight lessons and, once certified as a private pilot, he would take Langewiesche on local flights for the famous $50 hamburger. As he shared with me: "He really had an eye for the ladies."

BIOGRAPHY OF FRED ERNEST WEICK

Courtesy of NASA – August 10, 2015
https://www.nasa.gov/centers-and-facilities/langley/fred-e-weick/?

In recognition of pioneering full-scale propeller research, development of the low-drag NACA engine cowling and spin-resistant aircraft design. Credits: NASA

Fred E. Weick (1899 – 1993) contributed major innovations in aircraft design that significantly enhanced the overall performance, safety, and handling qualities of civil and military aircraft. He was one of the nation's earliest aviation pioneers — airmail pilot, research engineer, and aircraft designer. His genius touched virtually every aeronautical discipline, during a career that spanned over a half-century. Weick was a personal friend of many famous aviation figures such as Charles Lindbergh and Amelia Earhart; but his technical contributions to the aviation industry were far more important than most of his peers.

His career was characterized by frequent job changes; but each change was filled with outstanding contributions that were recognized throughout the world.

Fred Weick was born in Berwyn, Illinois, a suburb of Chicago. His aviation career was inspired at the age of twelve by watching airplanes built by the Wrights, Glenn Curtis, and Bleriot, flying at a nearby airfield. Soon he began making model boats and planes, and even a full-sized automobile, which he finished at 17 and called the Baby Bullet. He had no knowledge of the field of engineering, but was steered in that direction by his high-school science teacher.

He graduated from the University of Illinois in 1922 with a bachelor of science degree in mechanical engineering, and quickly found that there was not a call for aeronautical engineering talent in the United States. He applied to the U.S. Air Mail Service, and was hired as a draftsman and implementer of facilities, such as emergency landing fields. In 1923, he joined the Yackey Aircraft Company, responsible for everything from refueling airplanes to selling rides to passengers. While employed at Yackey, he applied for a junior aeronautical engineer position in government service, and went to work for the Navy's Bureau of Aeronautics, in Washington, D.C., where he became its first civilian assistant for propeller research. The offices and technical library of the NACA were within walking distance of his Navy office, and he spent considerable time studying reports and interacting with NACA personnel. While at the Bureau of Aeronautics, he began a textbook on propeller design that was to become a classic.

As a Navy engineer, he interacted with nearby managers of the NACA, and recommended that the NACA construct a special wind tunnel for testing full-scale propellers, and that the tunnel should have a test-section diameter of about 20 feet — four times the size of Langley's largest existing tunnel. When NACA management asked if he would be interested in becoming the designer and head of such a facility, he enthusiastically accepted the opportunity.

He joined the NACA Langley Memorial Aeronautical Laboratory in 1925, and proceeded to work with Dr. Max Munk to design the Langley Propeller Research Tunnel (PRT), the first wind tunnel devoted to full-scale propeller research. He was head of the PRT from 1925-1929.

After the technical value of the PRT was verified by initial propeller tests, Weick led the development of low-drag engine cowlings for air-cooled radial engines of the day. The resulting technology significantly enhanced aircraft performance, while ensuring adequate engine cooling. This contribution was one of the most important advances in aviation history and, in 1929, earned the NACA its first Collier Trophy.

Weick also initiated research on the effect of wing-mounted engine location on the performance of multi-engine airplanes. He personally conceived and planned a series of tests for the PRT, in which the vertical position of an NACA-cowled engine could be varied relative to the wing chord. The actual tests were run after Weick had moved to a new job; but the study had a huge impact on airplane designs, showing that the most efficient vertical location of the engines was in line with the wing chord. First applications of the results of the study were to the Boeing 247 and Douglas DC-2 airliners, and the Martin B-10 bomber. This NACA contribution was adapted by almost every designer of multi-engine aircraft, and was viewed by many as the advancement that enabled airliners to become economically viable.

Weick resigned from Langley in 1929 to become chief engineer at the Hamilton Aero Manufacturing Company where, among other duties, he conducted propeller tests on Charles Lindbergh's Sirius airplane, at Lindbergh's request.

In 1930, the Great Depression had a severe impact on aviation companies; and Weick rejoined the NACA, accepting an assignment to work on aircraft spinning, which had become a major problem causing a large number of fatal accidents. Before accepting the position, however, he obtained assurance that he could work in the area of stability and control in general, and thereby identify methods to make aircraft incapable of spinning — avoiding the problem of spinning altogether.

When he returned to Langley, he became the Assistant Chief of the Aerodynamics Division, and was very active supervising research in a new 7-by 10-Foot Atmospheric Wind Tunnel. He and his subordinates directed their research toward high-lift devices and innovative aircraft control concepts that would permit lower speeds for landing, thereby increasing safety. The group approached their research with great enthusiasm, to the point of having a contest to design the

most promising single-engine personal-owner-type configuration from a safety perspective. After technical evaluations by the group, Weick's revolutionary design, called the W-1, was declared the winner. The W-1's design incorporated a high parasol wing, an unorthodox auxiliary wing forward of the main wing, and a pusher-propeller. After free-flight model testing, Weick and a group of nine other Langley engineers built the full-scale experimental airplane in their spare time. This "home-built" W-1 was the first aircraft to employ a steerable tricycle landing gear. The W-1 airplane was flown in evaluation flights by NACA pilots, and was tested in the Langley Full-Scale Tunnel. A modified version known as the W-1A, was also tested.

Weick left the NACA again in 1936, and joined the Engineering and Research Corporation (ERCO) of Washington, D.C., as its chief designer. His Ercoupe airplane design demonstrated Weick's passion for safety. He simplified turning the airplane by combining the controls for the rudder and the aileron surfaces into a single-steering, interconnected device that was easy for amateur pilots to use. Built first as a two-seater, and later a four-place model, the Ercoupe was the first personal-owner airplane to be certified as spin-proof. About half of the 6,000 Ercoupes built were still flying at the time of Weick's death in 1993.

After the general-aviation bubble burst in post-war years, Weick joined Texas A&M University in 1948. Although he had absolutely no background in the use of aircraft for agricultural applications, he designed and developed a revolutionary agricultural airplane known as the Ag-1 crop duster, and also designed the Ag-3, predecessor to the Piper PA-25 Pawnee agricultural airplane series. His specialized designs for aerial applications were noted for dramatically improved safety features; and he soon became the leading technical expert on the design and use of this class of airplanes.

In 1957, he joined Piper Aircraft as director and chief engineer of its development center in Vero Beach, Florida, remaining there until his retirement. In addition to the Pawnee, Weick co-designed Piper's popular Cherokee line of personal and business light aircraft.

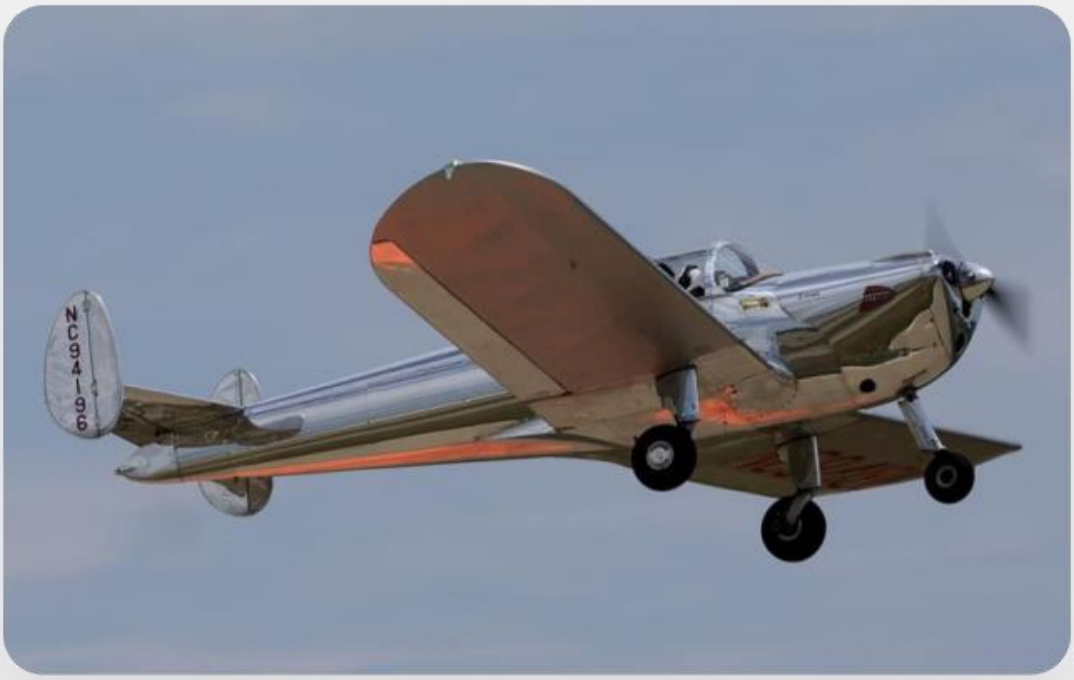
Weick retired from Piper in 1969, at the age of 70. He continued to be very active and visible as a consultant to the industry, and active member of the Experimental Aircraft Association.

Based on his contributions to aeronautics on the Ercoupe, Fred Weick was awarded the Sylvanus A. Reed Award, in 1945, and the W. H. Fawcett Award, in 1946. An extensive collection of his awards, papers, reports, presentations, and memorabilia are in the NASA Langley Historical

Archives. His highly informative autobiography, **From the Ground Up: The Autobiography of an Aeronautical Engineer**, was published in 1988.

In 1925, he married his high-school sweetheart and next-door neighbor, the former Dorothy Church, who preceded him in death in 1991. They had three children: a daughter, Elizabeth Jane "Betsey," and two sons, Richard and Donald.

Fred Weick died on July 8, 1993, in Vero Beach, Florida, at the age of 93.

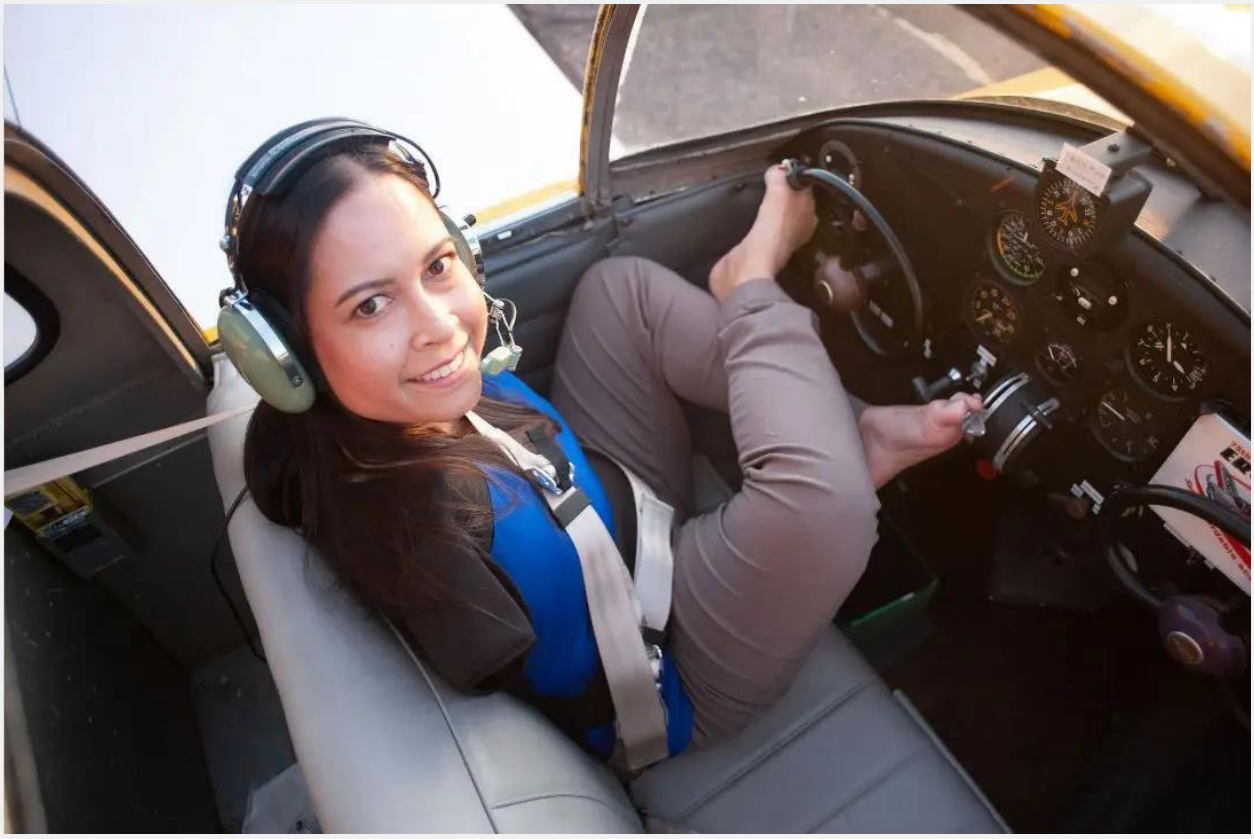


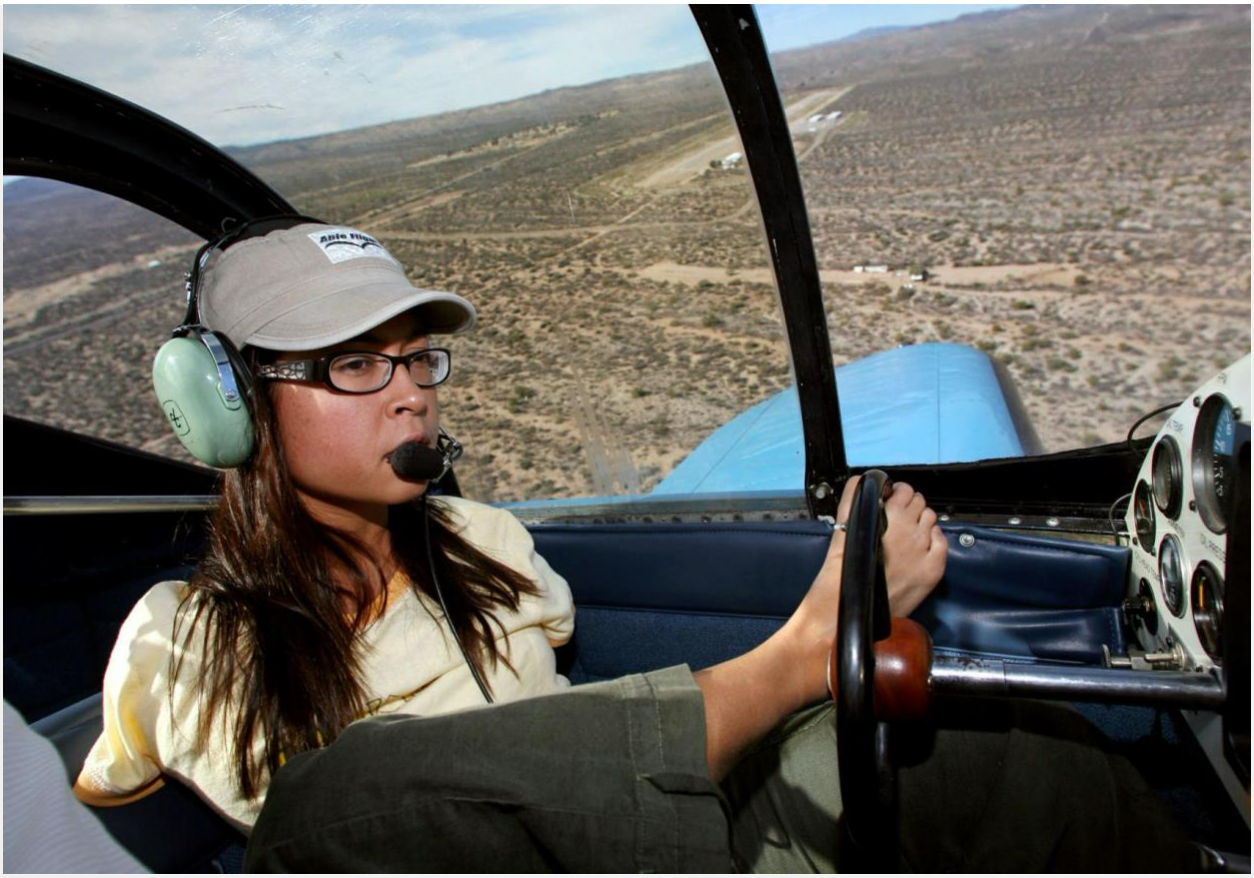
Ercoupe's key characteristics are:

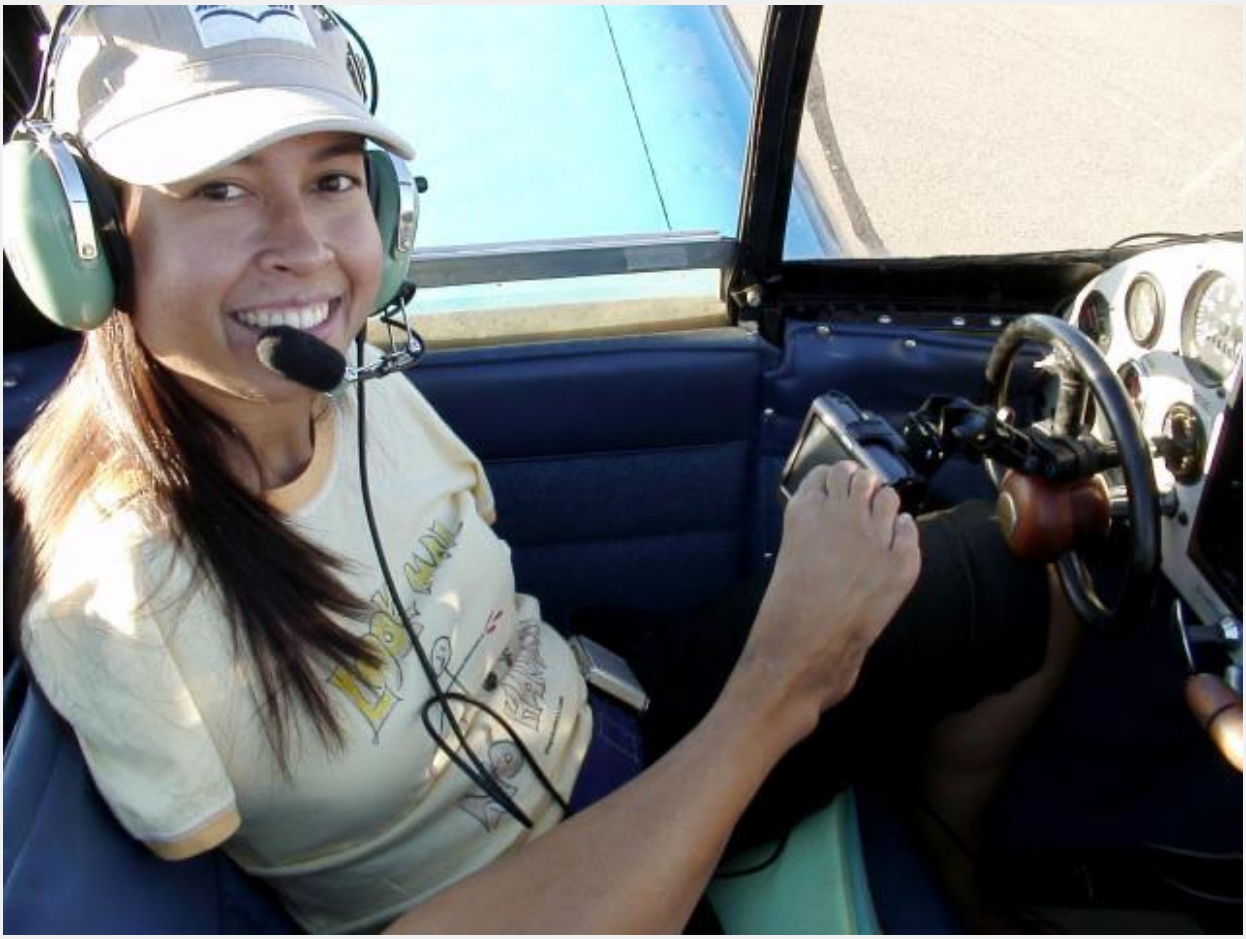
- Range: 470 nautical miles (540 miles / 870 km)
- Maximum Speed: 120 mph (193 km/h)
- Passenger Capacity: 2 seats (pilot and passenger)
- Engine: Typically equipped with a Continental C85-12F engine producing 85 horsepower
- Landing Gear: Tricycle landing gear for stable landings and takeoffs
- Wing Span: 30 feet (9.14 meters)
- Fuel Capacity: 24 gallons (91 liters)
- Cruising Speed: Approximately 100 mph (160 km/h)

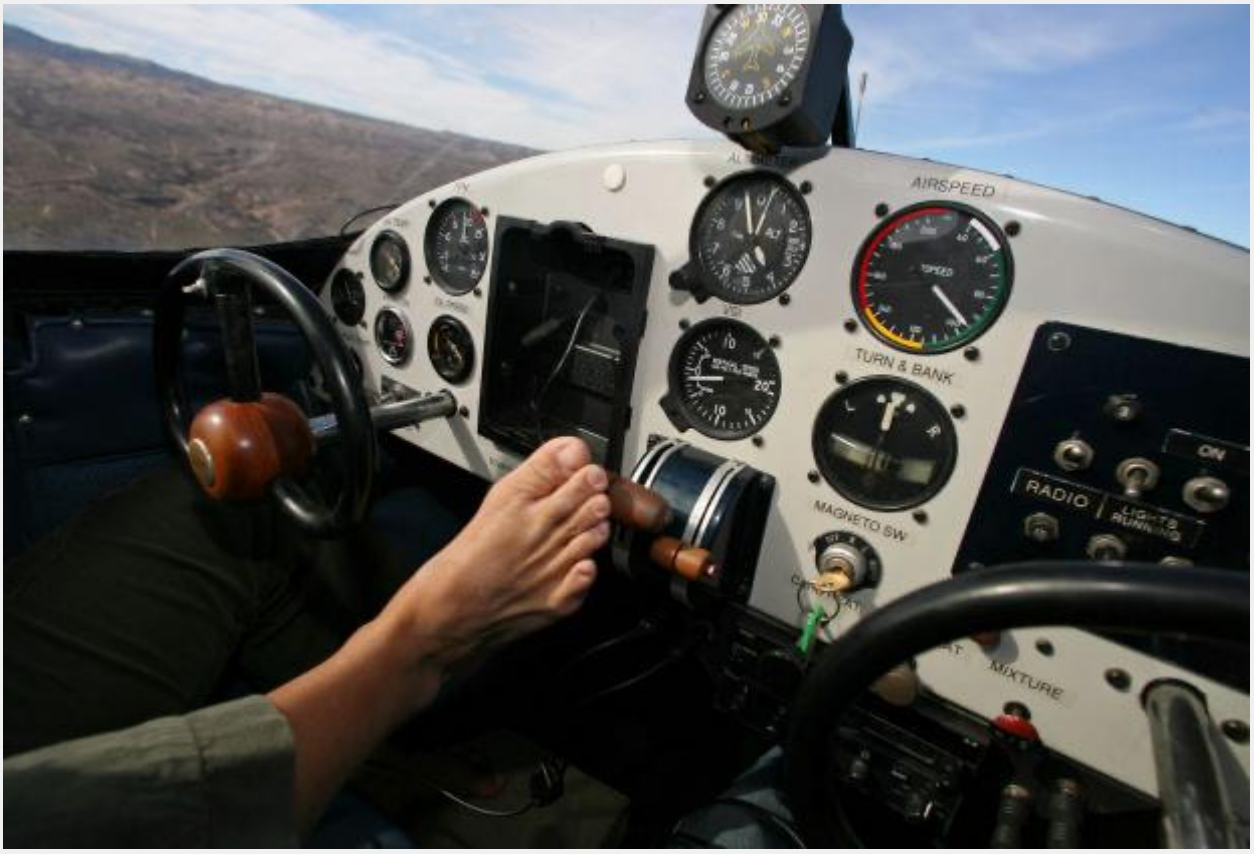
https://jessicacox.com/jessica-cox-defying-boundaries-and-touching-the-skies/ und-

With no arms from birth, **Jessica Cox** soared past every expectation to etch her name in aviation history as its only armless pilot. She gracefully commands her 1946 Ercoupe airplane, steering with her feet as deftly as any pilot would with their hands, and reaches altitudes up to 10,000 feet at speeds of 90 mph. Embodying innovation, relentless optimism, and accessibility, Jessica's mantra resonates: "I don't see a disability in my life. I've always adapted with my feet. My drive to push the envelope is energized when others doubt my potential.









Jessica's reputation as a pilot opens doors around the world. This year Jessica has the opportunity to dial down the difficulty of flying by building a custom-controlled airplane. An airplane like this has never been built before, which is poetically fitting for a pilot like her.

https://www.impossibleairplane.com/

rightfootedfoundation@gmail.com

https://jessicacox.com/speaking/

Right Footed is a captivating documentary that explores Jessica's journey. Directed by award-winning filmmaker Nick Spark, the film follows her life story, from her childhood struggles with disability to her groundbreaking achievements as a licensed pilot, accomplished martial artist, and influential motivational speaker.

Through intimate interviews, captivating footage, and heartfelt moments, ***Right Footed*** offers a glimpse into Jessica's determination as she becomes a mentor for children with disabilities and their families, and a disability rights advocate working in the U.S.A. and abroad**.** With the right mindset, anything is possible, and no obstacle is too great to overcome.

Over 30 Film Festival Screenings – Numerous BEST CHOICE Awards – available on amazon

Her book: **Disarm Your Limits: The Flight Formula to Lift You to Success and Propel You to the Next Horizon** – also on amazon

https://jessicacox.com/

THE ERCOUPE STORY on the Internet

Don Abbott: Fearless Flying – The Ercoupe Story
https://www.youtube.com/watch?v=DPxsh6fnSoU

Tom Horne: Ercoupe Overview
https://www.youtube.com/watch?v=afl1VIvOwMM

Scare Coupe – Part 1
https://www.youtube.com/watch?v=1gUc54yoph4
Scare Coupe – Part 2
https://www.youtube.com/watch?v=0LcnRnhDx2M
Scare Coupe – Part 3
https://www.youtube.com/watch?v=JdJoJ0yHLeI

Ercoupe Walkaround
https://www.youtube.com/watch?v=W35DI1P3dsQ

Flying with no rudder pedals!
https://www.youtube.com/watch?v=lV8eSAQbXqM

Grass strip landing in an ercoupe 415c
https://www.youtube.com/watch?v=Sdt5-_3nwIs

Ercoupe Smooth Flying
https://www.youtube.com/watch?v=1IKvptcDe-g

James Good – Ercoupe Aircraft Annual Inspection
https://www.youtube.com/watch?v=QB42dxM7XnM

ERCO Ercoupe - Warbird Wednesday Episode 40
https://www.youtube.com/watch?v=H5QbcKx6qRI

Ercoupe Flying
https://www.youtube.com/watch?v=3CgLUaQXOjc&list=PLV2oIyoB03RiE7PTFSWPpAegcRb74WNLD&index=6

First Flight Lesson in the Ercoupe – Part 1
https://www.youtube.com/watch?v=nkVD4fpyJNE&t=303s
First Flight Lesson in the Ercoupe – Part 2
https://www.youtube.com/watch?v=dJCQ1xkgWC0
First Flight Lesson in the Ercoupe – Part 3
https://www.youtube.com/watch?v=RUI8W14IfnA
First Flight Lesson in the Ercoupe – Part 4
https://www.youtube.com/watch?v=0EcAlsazNds
First Flight Lesson in the Ercoupe – Part 5
https://www.youtube.com/watch?v=kSQnrb8RiIk
First Flight Lesson in the Ercoupe – Part 6

https://www.youtube.com/watch?v=u2bgUBm-yE0&t=4s

Ercoupe Crosswind and Engine Out Landings
https://www.youtube.com/watch?v=_FeTT3DuAWY&t=8s

Ercoupe To Mc Clellan Airfield with Juan Browne
https://www.youtube.com/watch?v=Xo1RLlaCpQs

The Flying Show – Season 3, Episode 8: Erco Ercoupe
https://www.youtube.com/watch?v=R3zonhOVGfQ

1946 ERCO Ercoupe | A Design Ahead of its Time
https://www.youtube.com/watch?v=BdNGS1jqT_Q

Jessica Cox – A Guy Gave me a Free Plane
First certificated pilot without arms
https://www.youtube.com/watch?v=YihhygPzvso

Ercoupe Flying Movie – First Flight
Kim Blackseth – C6 paraplegic
https://www.youtube.com/watch?v=cBLJpyvitF4

Ercoupe Air-to-Air
https://www.youtube.com/watch?v=nLOgtp4IFXo

James Good – First Ercoupe Solo
https://www.youtube.com/watch?v=Fm_35r9xm8U

James Good – ErcoupeTV.com
Delightful videos, modern flights with a vintage modern airplane!

And many more YouTube Ercoupe videos are available, just search and enjoy!

Ready to hear the real story from real pilots:
Ercoupe Owners Club – www.ercoupe.org

AVIATION HISTORY: ERCO ERCOUPE

Rudder pedals? What rudder pedals?

April 1, 2019 Flight Training Magazine By Thomas A. Horne

Stalls and spins caused lots of fatal accidents in general aviation's early days, so in 1939 the stall- and spin-resistant Ercoupe was introduced.

Designed by engineer Fred Weick and built by Erco, the Engineering and Research Corporation of Riverdale, Maryland, the two-seat Ercoupe had tricycle landing gear with trailing-link struts for better ground handling—revolutionary features at the time. These features alone all but did

away with ground loops and hard landings. To prevent stalls and spins, the Ercoupe's up-elevator travel was limited to prevent the airplane from reaching stall angles of attack. The twin-boom, H-style vertical stabilizers were mounted away from the airplane's longitudinal axis so that the propeller's P-factor and torque effects wouldn't be as great at low airspeeds and high pitch angles.

Another interesting touch was the method of ground steering: You used the control yoke to steer, just like in a car. And the yoke was interconnected with the rudders to ensure coordinated flight. There were no rudder pedals in early Ercoupes because they weren't needed. A single brake pedal graced the floorboard in front of the pilot, another nod to automotive design. All these features added up to an airplane that was easy, safe, and fun to fly. The canopy halves even slid down so that you had the feeling of being in a flying convertible.

The first Ercoupes went on sale from 1939 to 1941, but World War II interrupted production, save for a few military versions—and a one-off model that used rockets for jet-assisted takeoffs. When production resumed in 1946, the model 415–C Ercoupe became a smash hit, with a whopping 4,309 of the 75-horsepower, Continental C-75-powered, 112-mph/96-knot airplanes delivered that year. Back then, Ercoupes sold for $2,600 and were even sold at Macy's department stores. But after that, sales went downhill.

The Ercoupe type certificate then went through a succession of owners, including Forney Aircraft Company and Alon Inc. Finally, Mooney Airplane Co. built a much-modified version of the Ercoupe—with a single vertical stabilizer. Today, Univair provides parts for the Ercoupe, but manufacturing ceased in 1974. Owing to their light weight (1,260-pound maximum takeoff weight) and limited speed envelope, they're popular as Light Sport aircraft and can sell for less than $20,000.

Stories such as this can be found in *Freedom to Fly: AOPA and the History of General Aviation in America*, celebrating the eightieth anniversary of AOPA, written by AOPA writers, now available for $39.95.

www.aopa.org/freedomtoflybook

Thomas A. Horne
AOPA Pilot Editor at Large
https://www.aopa.org/news-and-media/all-news/2019/april/flight-training-magazine/aviation-history-ercoupe

THE ERCOUPE IS EASY TO FLY – BUT YOU BETTER NOT BE IN A HURRY

It was supposed to be an airplane for the people.

By Tom LeCompte 2/16/2024

So you've had a "fender bender" in your plane and are in need of some wings. What do you do?

You could rent a plane from the local flight school. But at a cost of $155 per hour (whether the propeller is turning or not) that is simply not practical. Can you borrow a plane? Perhaps, but after someone learns why your plane is in the shop they might not be so keen on handing over the keys to their bird. You could bum rides from friends. Sure, but they may not stay friends for long. Or you could give up flying until your plane is repaired and use the time to work on your golf game. Never!

That leaves just one option: Buy a second plane.

The challenge is that planes are notoriously poor investments—in most cases they are either way overpriced or in such poor condition that the cost of making them airworthy makes them unaffordable. Finding a plane you can both afford and actually fly as soon as you're handed the keys takes some luck, and a strategy.

I wanted a basic machine, nothing fancy—a simple Cessna or Piper—something for day trips to the islands or Cape. It didn't need to go fast. It didn't need to be all-weather. It just needed to be reliable.

So my search began where all searches begin: the internet. But like all internet searches, frustration quickly set in. My search ran up against the reality that lots of people are looking for the same plane, particularly flight schools and new owners. Such planes, being in high demand, command a hefty premium in price. Not only that, but such planes also tend to be very high time (read: worn out), and thus more trouble than they're worth.

I needed to change my approach. After a couple of dead ends, I found an area of aviation where one can still find a simple, affordable aircraft: Vintage planes. The plane I generally fly is 60 years old, so by vintage I mean planes that are really old, almost antique. These are planes built not long after the dawn of aviation; planes that are covered in cloth rather than metal; planes manufactured by companies long out of business…the Taylorcrafts, the Luscombes, the Aeroncas, the Stinsons and the Swifts.

And what I landed upon surprised me: the Ercoupe, a twin-tail, tricycle gear, metal and cloth hybrid that was way ahead of its time when it was designed in the mid-1930s. Back then, the Ercoupe seemed poised to do for aviation what the Model T did for the automobile.

An Ercoupe was photographed outside the ERCO factory in 1946. (Courtesy College Park Aviation Museum)

In 1935, less than a decade after Lindbergh crossed the Atlantic in the *Spirit of St. Louis*, aviation had—to use a bad pun—taken off. Airline traffic in the United States was doubling every year, carrying more than 900,000 passengers (compared to more than 853 million passengers per year today). Each year saw a proliferation of new airlines, new airplane manufacturers, new records being made or broken and exploding interest in aviation.

In all this heady optimism, the Department of Commerce sought to bring airplane ownership within reach of ordinary citizens. Under the auspices of the National Advisory Committee for Aeronautics (NACA), the forerunner of NASA, it challenged engineers to develop a machine that inexperienced pilots could operate, at a price much less than conventional airplanes.

From this emerged the Ercoupe, a name derived by the name of the company that produced it, Engineering and Research Corporation (ERCO). Designed by legendary aeronautical engineer Fred Weick, the Ercoupe incorporated a number of features that made the plane simpler and safer to fly. This included tricycle landing gear, which made the plane much easier to take off and land than its tail-dragging cousins. The plane's twin tails were designed to be outside the propeller wash, which alleviated unwanted yaw movements on takeoff and at slow speeds. The bubble canopy gave the pilot unmatched visibility. The fuel-air mixture was fixed, so there was no mixture control. There were no flaps. Elevator deflection was limited, making stalls nearly impossible. And, most importantly, the plane's flight controls were integrated—the rudders were linked to the ailerons. That meant no rudder pedals, which also meant all turns were coordinated.

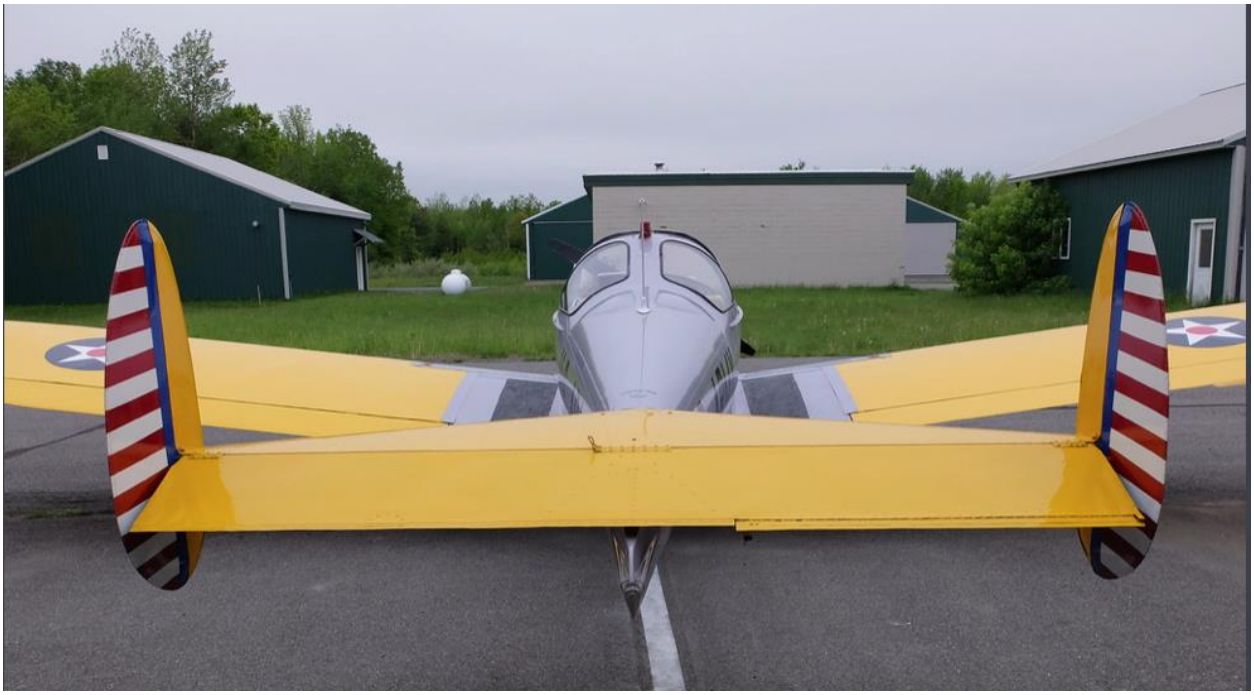
Because of this, the Ercoupe was the first plane to be certified as "characteristically incapable of spinning," and every plane has a placard on the control panel stating as much. On the ground, the nose-wheel was also linked to the control yoke, so the plane steered like a car.

A line of Ercoupes at various stages of assembly at the ERCO factory in 1946. (Courtesy College Park Aviation Museum)

ERCO marketed the Ercoupe as "the world's safest plane," one as easy to operate as the family car. In 1945, the sticker price was $2,665. A Buick sedan, by comparison, sold for $1995. In another first, you could buy an Ercoupe in a department store. Macy's took out a full-page ad in The *New York Times* in 1945 to herald the opening of its airplane department. At Hamburger's in Newark, New Jersey, elevator operators hollered, "Sixth floor, airplanes!" Aviation was going retail.

But the dream of "an airplane in every garage" never materialized. Though safer and easier to fly than conventional planes, the reality is that the Ercoupe still requires airmanship—not to mention a license—to fly. And that includes knowledge of weather, aviation regulations, navigation and aeronautics. The average American wasn't quite ready for this. Sales stalled. In 1950, ERCO sold the rights to the Ercoupe to the Forney Aircraft Company. Fred Weick moved on to Piper Aircraft, where he later designed the venerable Piper Cherokee, one of the most popular airplanes of all time. A succession of companies made Ercoupes up until 1967—a total of 5,685 in all—an exceptionally long run for a general aviation aircraft. Of those, more than 2,000 are estimated to still be flying.

A well-maintained Ercoupe still costs less than a compact sedan. The plane I found was born in 1946. When I first laid eyes on it, I thought it looked like an MG with wings. It was painted in the silver-and-yellow WWII Army Air Corps trainer scheme. Very sharp.



My Ercoupe shows off its twin tail–and its faux military coloiring. (Tom LeCompte)

Thing is, the only Ercoupes to actually serve in the military were a pair bought by the Army in 1941 that were evaluated for use in observation and later used as target drones. The government used another Ercoupe to test jet-assisted take-off (JATO), in which a short-burst rocket was strapped to the fuselage for a high-powered take-off.

So the plane's military paint scheme was a bit of a fraud, but that's okay because—having never served in the military—so am I. After getting it home, I placed a series of mosquito stickers along the side of the plane that attest to my "confirmed kills."

The man who sold it to me is a Navy veteran and retired Boeing 747 captain. He told me Pan Am used the Ercoupe to train its early crews in how to land in a crab. The conventional technique of banking the plane and applying opposite rudder to stay on the runway centerline wouldn't work with the giant 747 because the outboard engines could scrape the pavement if the wings weren't level.

"The technique was to fly in the crab, and at 50 feet above the runway the flight engineer would call '50 feet' reading the radar altimeter and the pilot would bring the nose around with rudder to straighten it out and reduce side loads on the main gear," he told me. "Worked well! Thank you Ercoupe for the help!"

My insurance company required me to get an instructor's sign-off before covering me for solo flight. My instructor, a young guy who flies for a major airline, had never heard of an Ercoupe. When I told him it had no rudder pedals, he sounded perplexed. "How do you land it?" he asked. "We'll figure it out," I said.

The plane, we discovered, is an absolute cinch to fly. Flip the battery switch, turn on the magnetos and just pull the starter. With the carburetor wired, there's no fuel mixture to adjust. Gas from the plane's two wing tanks is gravity fed to the engine, so there's no tank selector. Just "drive" the plane out to the runway, line it up, push in the throttle and when the plane hits 65 miles per hour lift it off the runway.

You're not going to go very far or go very fast with a cruising speed of around 95 miles per hour. And if there's a stiff headwind you may find that cars on the highway below are passing you. But with the windows down and the wind in your hair you get the feeling that this is the way flying was meant to be…that "slipped the surly bonds of earth" sort of thing. More than anything, it is just fun.

Want to check out some basic aeronautics? Stick your arm out the window and hold it in the wind. Watch the nose drop and the plane begin to turn (this is actually an approved technique for making a rapid descent). Put the plane into a steep turn and you'll get the feeling there's nothing between you and the ground. Circle over Gillette Stadium and it will be like you're on a string spinning over it.

But the best part of it is bringing it home. Given all my experience and training, I thought that landing sideways onto the runway would make for a hair-raising, jarring arrival. Not so. The trailing-link gear gently cushions the landing and the plane naturally pivots in the direction of flight, straightening out for a smooth, effortless landing.

"How can you tell when you're on the ground?" my brother asked when I took him up for a flight.

I wish all my landings could be like that.

Tom LeCompte is a freelance writer, airplane owner and longtime pilot based south of Boston. When not writing or researching stories, he's airborne somewhere. This article originally appeared on his blog, nineronepop.blogspot.com.

https://www.historynet.com/ercoupe-affordable-airplane/

The Rise and Fall of the Plane "Anyone Could Fly"

It was billed as the "Model T" of airplanes. So what happened?

Matt Blitz
Smithsonian Magazine October 1, 2015

In October 1945, the future of travel sat in a glistening showroom in a Manhattan Macy's. Alongside the department store staples of household appliances, gentlemen's socks and ladies' girdles was a small, all-metal, two-seater airplane. This was the Ercoupe, "the airplane that anyone could fly."

Built by the Engineering and Researching Corporation (ERCO), the Ercoupe was billed as "America's first certified spin-proof plane." It was safe: Ads called it the "world's safest plane" and compared its handling to that of the family car. Others vouched for its affordability, emphasizing that it cost less than $3,000 (about $39,000 today). It was also a media sensation: *LIFE Magazine* called it "nearly foolproof" and the *Saturday Evening Post* asked readers to not look at it "as another airplane, but as a new means of personal transportation."

It was the "plane of tomorrow, today." But by 1952, the Ercoupe was basically out of production. Seven decades later, the question remains — what happened?

The answer can be found at Maryland's College Park Airport, a facility recognized as the "world's oldest continuously operating airport." Located only ten miles from downtown Washington D.C, it's where Wilbur Wright first taught military officers Lt. Frank Lahm and Lt. Frederic Humphreys how to fly an airplane. The College Park Aviation Museum, which overlooks the airport's runway and house the ERCO company's archives, features a new exhibit highlighting the glitz and glamour of the forgotten aircraft.

The story of the Ercoupe begins with aviation pioneer Henry A. Berliner, who founded ERCO in 1930. Perhaps best known for developing a practical helicopter with his father, Berliner envisioned a future filled with accessible air travel. In 1936, he hired engineer Fred Weick, who shared his lofty ambition to develop an easy-to-fly, consumer-friendly aircraft. Later, Weick's daughter would say that her father's goal was to build "the Model T of the sky."

With that in mind, the Ercoupe was born. The first production model was completed in 1938 (an early model can be found in Smithsonian's collections), and it was unlike anything ever crafted before. It steered like a car due to the nose wheel being connected to the control wheel. It featured triangle landing gear, an innovation still used today. Most noticeably, though, the Ercoupe was rudderless, meaning the plane was flown entirely through the control wheel. When the Civil Aeronautics Administration decreed that the plane was "characteristically incapable of spinning" in 1940, it was clear that the Ercoupe had earned its famous moniker: "the plane that flies itself."

The Ercoupe was poised to be a flying sensation, says Andrea Tracey, director of the College Park Aviation Museum. "Even though aviation was only about 30 years old at the time," she says, "anyone could have and learn how to fly" the Ercoupe. Its accessibility was the secret of its early success, she notes: "You could order it from Macy's and J.C. Penney, just like you could have ordered a house through Sears Roebuck."

For a while, the plane even seemed to be impervious to world events. Though ERCO only manufactured 112 airplanes before the looming war effort halted production, it started selling the plane as soon as World War II ended. By the end of 1945, the airplane was in department stores across the country – from Denver to Baltimore, from San Antonio to Allentown. Celebrities like Dick Powell and Jane Russell bought and endorsed the airplane. The Secretary of the Interior Henry Wallace flew an Ercoupe solo. Magazine and newspaper features were written highlighting the safety, accessibility and affordability of the Ercoupe.

ERCO's marketing blitz worked: During the first year, the company took over 6,000 orders. To keep up with demand, Berliner increased production, firmly believing the boom was here to last. By mid-1946, the ERCO factory in Riverdale was producing 34 airplanes a day.

Then, it all fell apart.

The Ercoupe's journey from boom to bust happened seemingly overnight. First, production outpaced demand. A brief economic downturn in 1946 spooked would-be purchasers. And professional pilots voiced their suspicion of the plane, pointing out that while the plane was safe in the hands of an experienced operator, descents and speed drops could prove to be fatal for the average consumer.

In the end, only 5,140 Ercoupes were produced. Just two years after taking America by storm, Berliner sold the rights to his plane. Seven years after it was introduced, production of the plane ceased for good.

Today, only about 2,000 Ercoupes still exist (only about 1,000 are registered to fly with the FAA). Chris Schuldt flies his Ercoupe three or four times week, usually making short trips from his home in Fredericksburg, Virginia. He says the plane still gets fellow pilots talking. "You can never land anywhere where someone doesn't come up and ask you about the airplane," says Schuldt. "They are a real conversation piece."

Schuldt, who has had his pilot's license since 1996, says the Ercoupe is relatively simple to learn. But, like pilots of yore, his enthusiasm comes with a caveat. "90 percent of the time you can teach someone how to fly this plane much more easily and simply than many other airplanes," he says. "The only problem is that last ten percent: It's the ten percent that will kill you."

Maybe it was the danger. Maybe Americans just weren't ready to buy a plane along with refrigerators, underwear and the "miraculous" ballpoint pen. Ultimately, the Ercoupe wasn't the plane for everyone — but it still represents a soaring vision of what travel could have been.

https://www.smithsonianmag.com/travel/ercoupe-was-airplane-anyone-can-fly-until-it-wasnt-180956769/

The Ercoupe

It's spin-proof, stall-proof, and just plain fun.

By Frank **Ayers** **Plane & Pilot** Jan 12, 2025

Many years ago, while working my way through college pumping avgas at the local airport, I discovered that one of our university deans owned a diminutive two-seat, twin-tailed airplane—an Ercoupe. He was proud of his little bird, with its unique split sliding canopy, no rudder pedals, and a delightful art deco instrument panel.

Long before he purchased his very own Boeing 707, actor John Travolta discovered this economical fun flier and began his remarkable aviation career as a proud owner. Then, a few years ago, I was privileged to hear how an amazing young woman, Jessica Cox, earned her sport pilot certificate. Born without arms, Cox flew her trusty Ercoupe using only her feet.

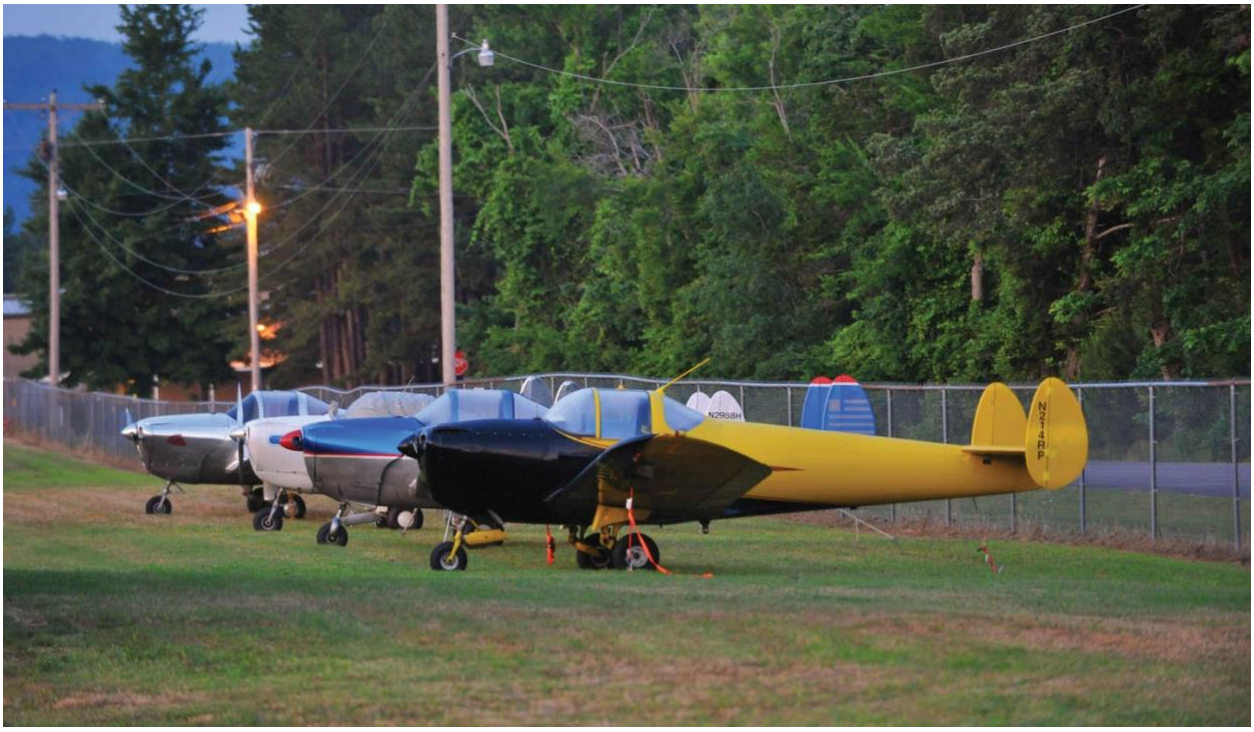


Photo courtesy of Larry Snyder / Ercoupe Owners Club

The story of this unique airplane begins in the early 1930s with Fred Weick, an engineer for the National Advisory Committee for Aviation (NACA). Weick had advanced the field of propeller efficiency and designed and managed the first full-scale propeller wind tunnel at what is now NASA Langley. In 1929, he earned the Collier Trophy as the designer of the efficient NACA cowl for radial engines that graced so many of the air racers, airliners, fighters, and bombers that followed.

During this golden age of aircraft development, government and industry were looking for ways to make aviation safer and less expensive. Weick and his team were tasked with developing a safer light aircraft that would neither stall nor spin. His first design, the NACA W-1, a high-wing prototype, featured the first steerable tricycle landing gear and proved the no-stall/spin concept. Moving to the private sector at the Engineering and Research Co. (ERCO), Weick refined the design into the low-wing, twin-tailed beauty whose distinctive looks are unmistakable.

The Ercoupe design featured an interconnect between the full-span ailerons, rudder, and steerable nosewheel. The control wheel actuated all three, negating the need for rudder pedals and ensuring coordinated flight with just a yoke. Push and pull for pitch. Turn for roll and to steer the nosewheel. Additionally, Weick limited the upward deflection of the elevator to avoid the stall. At minimum speed, the Ercoupe tended to mush rather than provoke itself into a more developed stall.

The combination of these two control features rendered the Ercoupe virtually spin- and stall-proof. So much so that later versions of the aircraft, including the final Mooney M10 Cadet variant, had to be extensively modified so that students could be taught stalls and spins.
The Civil Aviation Authority (CAA, predecessor to the FAA) recognized the benefits of the Ercoupe's two-control system—but also the limitations its training presented for conventional aircraft—and created a unique pilot certificate for pilots who had never used the rudder pedals.

They were, of course, limited to flying only two-control aircraft of which there was exactly one at the time: the Ercoupe.

The main landing gear featured a swiveling trailing link design to allow landings in a crab, a simple version of the crosswind crab system in the mighty B-52 Stratofortress. In a crosswind, you fly an Ercoupe down the runway with whatever crab angle you need to track the centerline and let the gear figure it out upon touchdown.

The ERCO Ercoupe was an immediate success. The first flight took place in 1937, production began in 1939, and the company produced and sold 112 Ercoupes before the start of World War II. However, production ended in mid-1941 due to the War Department's need for strategic materials. Once the war ended, Weick and ERCO believed they were in the right place at the right time with the right airplane for the thousands of pilots returning home. In 1946, the factory, located near the historic College Park Airport (KCGS) in Maryland, produced more than 4,000 Ercoupes. Unfortunately, the boom turned to bust, the expected market failed to materialize, and initial production of the ERCO Ercoupe ended in 1947. Ercoupe fans shouldn't feel slighted as this collapse happened across postwar general aviation.

The Ercoupe was down but not out. Production continued off and on for the next 30 years. The name Ercoupe applies to the original ERCO-produced models, a few more produced by Univair, and an additional 200 or so created by Sanders Aviation. Forney Aircraft Co. acquired the type certificate and produced an additional 138 aircraft, now dubbed the Aircoupe. These included an F-1A model that featured conventional flight controls and rudder pedals. In the late 1960s, two former Beechcraft executives formed the Alon Co., a play on their last names, Allen and Higdon, and produced the Alon Aircoupe. This model featured the sliding canopy, rudder pedals, and an upgraded Continental C-90 engine, giving the airplane a big power boost from the original 65 hp Continental A-65. The buyer could specify the original rudderless control system, but few did.

The final chapter of the Ercoupe story began with great promise. It was the late 1960s and GA was in a boom period. Cessna and Piper featured complete aircraft lines from two-seat trainers to multiple twin-engine offerings. Major aerospace companies like North American were acquiring out-of-production, piston-single type certificates to create their own GA line. Meanwhile, down in Kerrville, Texas, Mooney decided to follow suit and get into the two-seat trainer market to supplement its line of low-wing, retractable-gear traveling airplanes. Thus was born the Mooney Cadet.

Mooney took the Alon Aircoupe design, including a fighter-like sliding canopy, and added a modified tail section with large windows and a single vertical tail. The goals of this design change were increased visibility and the ability to spin and stall to meet FAA pilot certification requirements. While the company was at it, why not sweep the trailing edge of the tail forward, like the rest of the Mooney line? While the tail feathers mimicked the Mooney style, they did not share the hinged vertical and horizontal tail assembly of the legendary M20, settling for fixed vertical and horizontal surfaces, the latter with a conventional trim tab.

This final iteration of the Ercoupe line, the Mooney M10 Cadet, was striking, though I suspect some Ercoupe aficionados might disagree. Alas, within a year, Mooney had once again fallen into financial distress. Butler Aviation, the new owners of the Mooney type certificate, had no place for the diminutive Cadet in its newly retitled Aerostar lineup. This would truly be the end of the line for Weick's safety-first masterpiece.

Today, an active Ercoupe Owners Club (EOC) provides product support, advice, and camaraderie for the nearly one-third of the original 5,600 Ercoupe variants still flying. The College Park Aviation Museum, located at the historic College Park Airport, features a complete history of the little Ercoupe. (If you're in the Washington, D.C., area, College Park is an easy Metro ride out.)

And how about the flying experience? Once the new Ercoupe pilot gets over taxiing the airplane by steering with the control wheel like a car, it is simply delightful. With the canopy open, the wind in your hair, and the leisurely 80-knot cruise, it is flying at its most basic best. Many of the Univair 415C models qualify as light sport aircraft (LSA).

This brings us full circle to Jessica Cox and her trusty Ercoupe, enjoying her 60-year-old stall-and-spin-proof light sport airplane, and reminding all of us of the joy of flight. This alone may qualify the little Ercoupe as an incredible plane.

https://www.planeandpilotmag.com/the-ercoupe/

The Ercoupe, often called "The Safety Plane," blending aileron and rudder control into a single yoke, was originally designed to make flying safer and generally more accessible. This innovation opened the door for Jessica Cox, a remarkable pilot born without arms, to achieve her dream of flight. Using only her feet, Jessica mastered the Ercoupe's controls and became the first armless pilot licensed to fly a plane. Jessica's incredible determination together with Fred Weick's forward-thinking design stands as a powerful reminder that when innovation meets courage, even the sky is no limit.

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