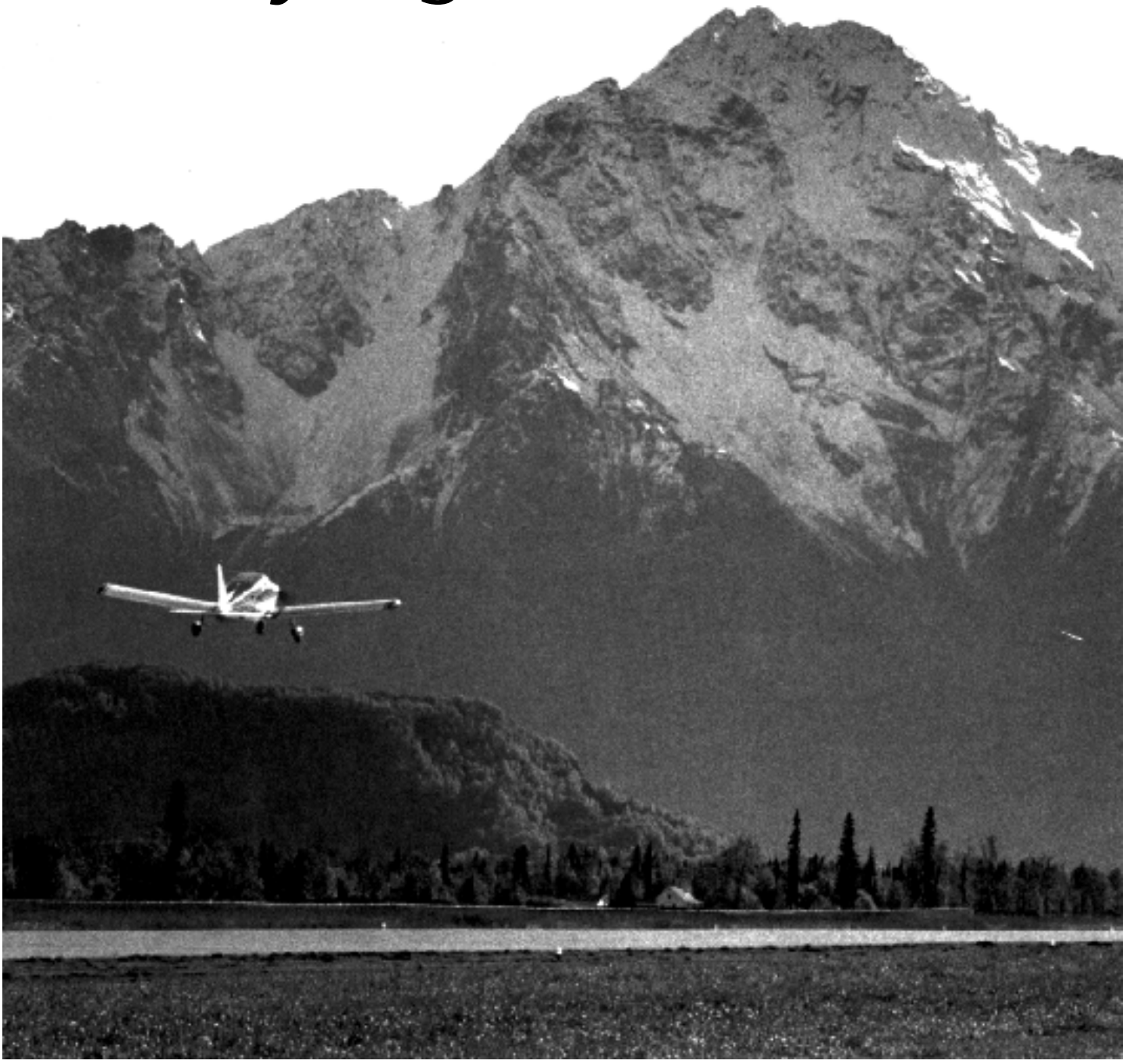
A Flying Start



Primary Missions of the FAA

- To regulate air commerce in a way that will promote its development and safety while fulfilling the requirements of national defense;

- To control the use of navigable airspace and regulate both civil and military operations in the interest of safety and efficiency;

- To promote and encourage the development of civil aeronautics;

- To install and operate air navigation facilities and to consolidate research and development related to these facilities;

- To develop and implement programs and regulations to control aircraft noise, sonic boom, and other environmental effects of civil aviation.

May 1992

Would You Like To Fly?

Learning may not be as hard as you think. In fact, each year thousands of people from all walks of life learn to fly. Today there are more than 700,000 active pilots in the United States. Of these, more than 450,000 are general aviation pilots--a figure that does not include military or air carrier pilots--and most of these pilots hold a private or recreational pilot's certificate which is the first goal of the student pilot.

Some pilots continue their training to get an instrument rating or additional certificates, such as flight instructor, commercial pilot, or even airline transport pilot. However, most people are content with a private pilot certificate which permits them to fly themselves and non–paying passengers virtually anywhere they want in good weather. Another alternative is a recreational pilot certificate which allows the pilots to fly within fifty nautical miles of the base airport.

Many pilots fly just for the sheer joy of flying, while others fly because it is an independent, fast, convenient form of transportation. Instead of driving or being tied down to public transportation schedules, they fly on business, vacations, or any other trips they wish to make.

The rental plane is a boon to the general aviation pilot. Pilots do not need the cash to buy their own planes in order to fly. With a recreational or private pilot certificate, pilots may rent planes at most airports. In fact, of the approximately 35 million general aviation hours flown each year, the majority are flown in rented aircraft.

So that's the general picture. Now, if YOU want to fly, here are answers to a few commonly asked questions.

What Do I Need To Fly in the United States?

To fly in the United States as an FAA certified pilot, you must pass both a practical test and a written test and meet three requirements. First, you must be at least 16 years of age to solo and 17 to get an airplane or rotorcraft pilot certificate. (Glider and balloon pilots must be at least 14 years old to solo, 16 years old to get the pilot certificate, and do not have to have an FAA medical certificate.) Second, you must pass a physical examination from an FAA designated doctor. And third, you must be able to speak, read, and understand English, the international language of aviation. This last requirement is important because all air traffic control flight instructions are transmitted in English, as is other vital flight information.

How Hard Is It To Learn To Fly?

In order to get your pilot certificate, you must complete two types of instruction: ground training and flight training.

Ground training teaches you the principles of flight, aircraft systems and performance, meteorology and weather patterns, navigation, radio communications, and flight planning.

Flight training begins with lessons in a training aircraft with a flight instructor, and when he or she feels you are qualified you will make your first solo flight. This is where all the knowledge you have accumulated in ground training gets put into practice. Although it is not necessary to go to ground school before beginning flight training, it is a good idea to have fundamental knowledge of the general principles of flight.

How and Where Can I Learn To Fly?

There are FAA certificated instructors at most, if not all, small airports. "Fixed Based Operators," or FBO's, as they

are called, are aviation businesses located at airports. They provide a variety of services such as aircraft rental, storage, fuel, repairs, and ground and flight instruction (FAR Part 61). FBO's are not employed by the FAA, but some have pilot schools that have been certificated by the FAA to provide flight instruction under FAR Part 141 .

Another alternative is to join a flying club in your area. Local flying clubs can provide services similar to FBO's. The clubs generally consist of a group of aviation enthusiasts who collectively own aircraft and may have certificated instructors available to instruct club members.

What Will My Flying Lessons Be Like?

When the time comes for you to start, you will undoubtedly begin flying in a single engine, two–place training aircraft. Since there are no other requirements to fulfill before your first lesson, you may start flying as soon as you decide to go ahead and learn.

Right from the beginning you will do most of the
right spot on the horizon.

As your lessons continue, you will start to make g
to practice other maneuvers.

Eventually the day will
altitude,
usually at
1,000 feet
above
ground in
the "pattern"
around the
airport,
sooner than
before. At first you might think that it is your imagination, but it is not. In fact, you are flying without

your instructor's weight, and in a small aircraft, this can make a noticeable difference in aircraft performance.

As you turn into the final approach for your first landing, you may feel a little apprehensive, but as you line up with the runway, you'll start doing what you've been trained to do automatically. Your concentration may be so intense that it may not be until you have taxied off of the runway that you stop to think about what you've done and how smooth it was.

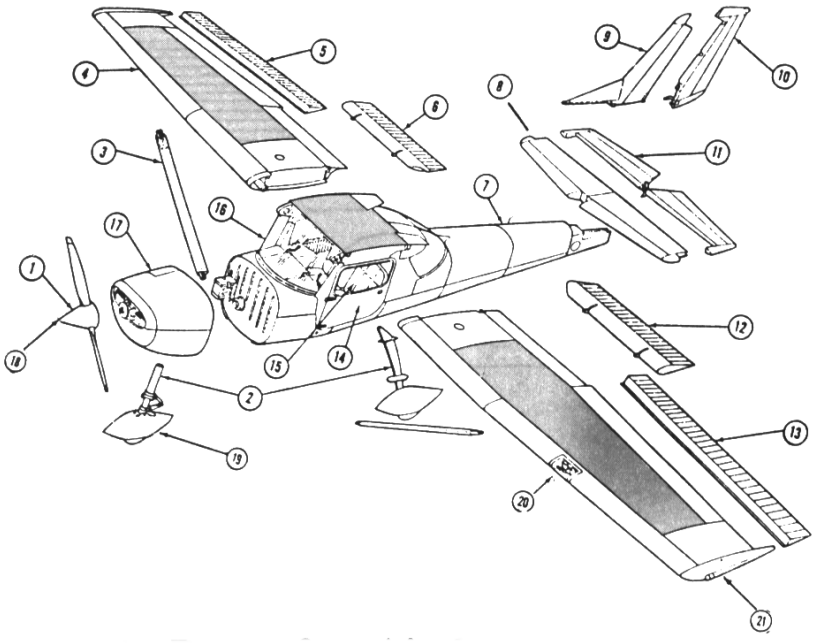
The first solo is a milestone in your training. You are on your way, but you still have a lot of flying and studying to do before you get your pilot certificate.

How Long Does It Take To Get a Private Pilot Certificate?

This depends upon how much time you can dedicate to flying. Many people try to average three or four hours a week of flight training, but if financial or time constraints do not permit this, all is by no means lost. Flying is supposed to be fun--don't think that you have to adhere to a strict schedule each week, but the more time you can put in, the more familiar and confident you become with how the aircraft operates. The FAA requires that you have at least 30 hours of flight time for a recreational pilot certificate, and at least 40 hours for a private pilot certificate, but most people have more.

After starting your solo flights, most of the remainder of your time will be spent improving the maneuvers you have learned and practicing takeoffs and landings. The maneuvers teach you to understand what your aircraft can and cannot do. The instructors teach you all about positive control of the airplane and how to maintain it. After you have passed a written examination and your

The Main Parts of an Airplane



1. Propeller
2. Landing Gear
3. Wing Strut
4. Wing
5. Fuselage
6. Horizontal Stabilizer
7. Fin and Dorsal
8. Rudder
9. Elevator
10. Left Wing Flap
11. Left Wing Aileron
12. Door
13. Seat
14. Wingshield
15. Engine Cowl

instructor believes that you have had enough instruction, you will finally be prepared to take the flight test with an FAA designated pilot examiner. As you fly, the examiner will evaluate your ability to control the aircraft at all times: in other words, your ability to fly safely. If you are applying for a private pilot certificate, you will also be tested on your radio procedures and your use of navigational equipment. These are the determining factors which will be scrutinized to determine whether you meet the standards for a pilot certificate.

How Safe Is Flying a Small Airplane?

As your time flying an airplane increases and you become more familiar with how the aircraft works, you will find that general aviation aircraft are very safe in the hands of a competent pilot. The construction of these planes adheres to strict safety regulations imposed by the FAA. In addition, the airplanes are frequently inspected by qualified mechanics and periodically checked by FAA inspectors.

Why Does an Airplane Fly?

There are four basic forces that act upon an airplane during flight: lift, weight, thrust and drag.

LIFT is generated by the wings, which function as airfoils. An airfoil is any surface such as a wing, which provides aerodynamic force when it interacts with a moving stream of air. The wings on an airplane have more camber, or curvature, on the upper portion than the lower portion, which causes the air to flow more quickly over the top of the wing. One of the primary laws of lift comes from Bernoulli's Principle, which states that as the velocity of a fluid (in this case air) increases, its pressure

decreases. As the wing separates the airflow, it creates an area of decreased pressure above the wing as compared to the air pressure below the wing. The pressure differential between the upper and lower portions of the wing is the primary source of lift.

WEIGHT is the opposing force of lift and is caused by the Earth's gravitational pull on the aircraft and its contents. When enough lift is generated to overcome gravity, the aircraft becomes airborne.

THRUST is the forward acting force that propels the aircraft. As the amount of thrust is increased, speed and lift are generated. On most training aircraft, a single engine provides the necessary thrust to move the plane. Larger aircraft, however, may have two or more engines or even jet engines.

DRAG is the deflection or impediment of smooth airflow of air around the aircraft. Drag functions in the opposite direction of thrust. As thrust increases, the drag of the aircraft also increases and eventually limits the speed of the aircraft. When thrust is greater than drag, the aircraft is accelerating; conversely, when drag exceeds thrust, the plane's speed is decreasing.

The aircraft's movement is controlled by the pilot using the yoke (similar to a three–dimensional steering wheel) and foot, or rudder, pedals.

The yoke turns left and right, as well as moving backward and forward. Turning the yoke to the left or the right causes the ailerons on the wings to move up and down. For instance, turning the yoke to the left causes the left aileron to go up and the right to move down. As this occurs, the right wing generates more lift and the right wing moves upward, and the left wing goes down. The result is the plane rolls to the left.

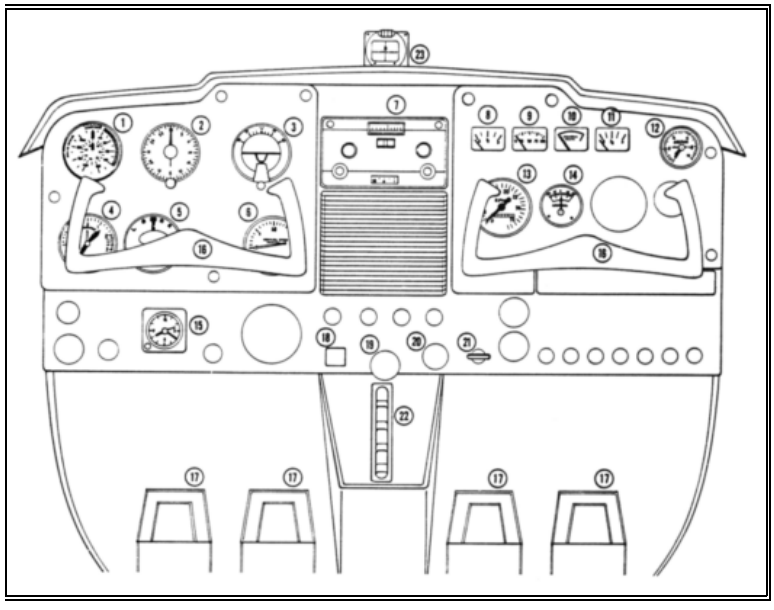
Up-and-down movement is created by pulling or pushing the yoke. Pulling the yoke toward you raises the elevator on the tail, which pushes the tail down

and the nose up, placing the aircraft in a climb altitude. Conversely, as you push the yoke forward, the elevator lowers, raising the tail and pushing the nose downward.

The foot pedals control the rudder movement on the tail of the aircraft. Pressing the right rudder pedal moves the tail to the left and the nose to the right. The rudder and the ailerons are used in conjunction to produce a smooth coordinated turn.

Although the cockpit may seem confusing at first, most aircraft have six basic instruments to aid the pilot during flight.

1. Airspeed indicator: This instrument shows how fast the aircraft is travelling through the air.
2. Attitude Indicator: This instrument functions as an artificial horizon. It shows whether the plane is banking to the left or right and if the nose is above or below the horizon.
3. Altimeter: This instrument is a function of barometric pressure and shows the altitude in feet above mean sea level.



4. Turn coordinator: This instrument features a miniature airplane inside the dial and gauges the turn rate and direction of the aircraft. By using the turn indicator, you can complete a standard rate 360 degree turn in exactly two minutes.
5. Heading indicator: This instrument is a directional gyro (DG) and functions as a compass to indicate the current heading of the aircraft.
6. Vertical speed indicator: This instrument measures the change in air pressure as the aircraft ascends or descends and registers the change in feet per minute.

Is It as Easy as It Seems?

It's as easy as that. Once you have your pilot certificate, the sky's the limit! You can continue your training to get your instrument rating. If you have received flight training for night flying, then you can fly at night. An instrument rating is not required to fly at night except under certain conditions for a commercial pilot. (A recreational category pilot cannot fly at night under any circumstances unless he or she is with an instructor.) From there you can go on and learn how to fly seaplanes or multiengine aircraft. The more experience you have, the more potential there is--become an air transport pilot and carry passengers to new and exciting places or become a certified flight instructor and teach other people the wonders of flying. When you begin your pilot's lessons you have opened a whole new world and gotten off to A FLYING START.

For more information on how to get your pilot's certificate, call or write your local FAA Flight Standards District Office, found in the telephone book under "United States Government, Department of Transportation – Federal Aviation Administration."

U.S. Department
of Transportation

**Federal Aviation
Administration**