

Sky Streakers Handbook for Beginning Pilots

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General Club Information:

The Sky Streakers R/C Club is open to all categories of radio control (R/C) models with emphasis on fixed wing aircraft and helicopters. The club's main purpose is to promote radio control modeling and welcomes all persons who demonstrate a genuine interest in R.C. aircraft building and/or flying.

The Sky Streakers is an Academy of Model Aeronautics (AMA) chartered club #1165, and as such, all flying members are required to have a current membership in the AMA.

Membership fee information can be found online at: <https://www.modelaircraft.org>.

With recent changes in federal law, all RC pilots are also required to register with the Federal Aeronautics Administration (FAA) at <https://FAADroneZone-Access.faa.gov/#/>, to complete the registration and to take the DRONE TEST. (The FAA classifies RC aircraft as “drones”)

Training:

Training night is held every Wednesday evening from 5:00 PM - 7 PM, weather permitting.

Training will begin sometime in May and may last through September depending on weather and interest. Flight instruction will take place at the Sky Streakers field to give members, and those interested in becoming members, proper instruction, and training.

There are two INTRODUCTORY Pilot programs: The club's and the AMA's.

The club's Introductory program:

The club's training system of using instructors and 'buddy boxes' (transmitters connected to the instructor's transmitter) allows people to learn to fly with a very reduced risk of injury to themselves, their plane, and to by-standers.

Prior to joining the club, interested individuals are welcome to come to the airfield on Wednesday evenings to participate in the club's Introductory Pilot Program. You may use your airplane or one of the club owned trainers.

The Introductory Pilot Program allows persons to receive hands on flying instruction for a 30 day period which gives ample time for a prospective pilot to decide whether they enjoy flying and wish to continue.

During the 30 day Introductory Pilot Program, students are welcome to fly with an instructor using the club's trainers and equipment.

Those wishing to continue after the 30 day introductory period need to plan to do the following, either during or soon after the introductory period:

1. Since the Sky-streakers club is chartered by the Academy of Model Aeronautics (AMA), all flying members are required to be AMA members as well as having aircraft registered with the FAA .

For more information, visit the AMA's Web site at: <https://www.modelaircraft.org>.

2. After the 30 day introductory period, students should bring their own trainer, with transmitter, to fly (Club buddy boxes may be used.)

3. Be aware that each student's plane will be subjected to a first time safety check by a club instructor before it is allowed to fly.

4. Be sure that the transmitter and receiver batteries are fully charged, and that you have the proper tools and materials to get the plane flight ready.

The AMA's Introductory Pilot Program:

The AMA offers new pilots a 60 day insurance coverage while flying with a certified instructor. Your instructor can supply more details.

General Safety Rules

The Academy of Model Aeronautics National Model Aircraft Safety Code, (www.modelaircraft.org/ a paper copy is also included for new students), should be read carefully and adhered to by all prospective RC pilots.

In addition, some basic safety tips and airfield rules are:

1. Spectators, children, and pets are required to stay behind the pit area (The area where planes are prepped for flight.) AMA membership, or being under the supervision of an instructor, is required to enter the pit area. (Pets must be restrained.)

2. All engine startups and brief adjustments will be performed in the pit area.

3. Airplanes must be physically restrained when the engine is running while the plane is in the pit area.

4. Do not reach over or stand in line with a spinning propeller.

5. Flight control shall take place from the designated pilot stations with a limit of three (3) planes flying at the same time on training night.

6. Takeoff and landing patterns will be dictated by the wind direction and/or the instructor.

7. Flying over the pits, parking, and spectator areas is strictly prohibited.

8. Pilots must announce their intentions to take off and to land.
9. Pilots must call-out "ON THE FIELD" to other flyers when entering the runway or crossing the runway to retrieve an airplane. It is the responsibility of the pilot entering the field area to check for approaching aircraft
10. Dead stick landings and aircraft having trouble will be given the right of way.
11. As a general safety rule, it is recommended you load batteries, service cowls/covers on electric planes from behind to stay clear of the propeller
12. As a general safety rule, it is recommended you use a throttle cut switch for electric airplanes.

Preparing for Trainer Night

As previously mentioned, during the 30 day Introductory Pilot Program, all that is required is that the student arrive on time and be ready to learn. (When not actually flying, there is much that can be learned by watching and listening.) After that introductory period students should bring their own trainer and support gear.

Full scale pilots use a checklist to be sure that the aircraft is ready for takeoff. The following is a checklist that can be used to get ready for Trainer Night:

1. Airworthy trainer (subject to a first time safety inspection by a trainer)
2. Transmitter batteries fully charged
3. Receiver (and motor, if electric) batteries fully charged
4. Elastics (or bolts) to hold the wing on
5. A proper charger for your batteries
6. Basic tools that may be needed for adjustments and minor repairs
7. Any cleaning supplies to clean your model after flying.

Flight Simulators:

Flight simulators are an excellent tool for practicing flight techniques and are highly recommended. Simulators use sophisticated software that runs on a PC computer with a transmitter connected to the computer by way of a USB cable. A wireless dongle may also be used to allow the use of your transmitter wirelessly.

There are a few flight simulators available. RealFlight is the most common flight sim available. Real Flight contains many airports, current RC planes, and helicopters. As with any purchase, read product offerings, reviews, and specifications carefully as well as talk to RC pilots who have used flight simulator software before buying.

Ground School - Aircraft Controllers and Control Surfaces

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Radio control functions and features vary depending on the complexity of the RC system, but the majority of RC systems all share the same basic concepts.

The fundamental purpose of the RC system is, of course, to control the directional movement of your aircraft. There are 2 channel systems, available for simple aircraft such as gliders, and those going up to as many as 12 or more channels for complex airplanes. The word 'channel' refers to each separate function of the RC system, like a channel for the throttle, a channel for the rudder, etc. Because of space limitations, we will concentrate on 4 channel systems.

The Transmitter:

Just to add to any confusion, in addition to systems with different numbers of channels, transmitters are available in 4 different "Modes" (Mode 1, Mode 2, Mode 3, and Mode 4). The mode of a transmitter refers to what functions the two "sticks" control. In North America, most transmitters with 4+ channels use Mode 2 functionality.

Stick controls are: the left stick operates throttle & rudder, right stick operates elevator & ailerons.

Mode 2

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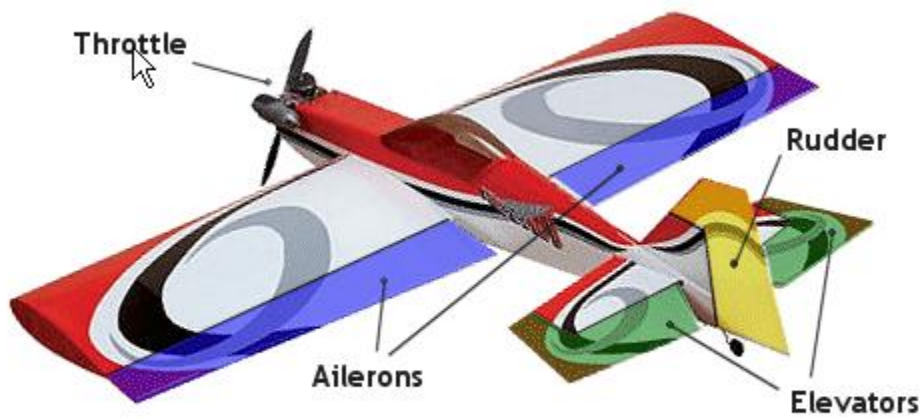
Each stick on a Mode 2, 4+ channel transmitter moves up and down and left and right..The right hand stick moves forward and backward to control the up/down elevator movement and it moves left and right to control the ailerons.

The left hand stick moves forward and backward to control the throttle and it moves left and right to control the rudder.

Learning to control two actions with one stick may sound complicated but is quickly mastered and with practice quickly becomes second nature.

RC airplane controls are the same as those found on full size airplanes and they control the model in exactly the same way.

The four primary controls of an RC airplane are throttle, elevator, ailerons and rudder. The elevator, ailerons and rudder are known as control surfaces.



Above: location of ailerons, elevators and rudder on an rc airplane

The Throttle:

The throttle (or electronic speed control - ESC on an electric powered model) controls the speed of the motor.

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In the air throttle/motor power not only controls the forward speed of the airplane but also, more importantly, the rate of climb and descent, because different amounts of lift are generated at different airspeeds. For example, if your landing approach path is too low you can make the airplane rise slightly without changing speed much, simply by advancing the throttle instead of

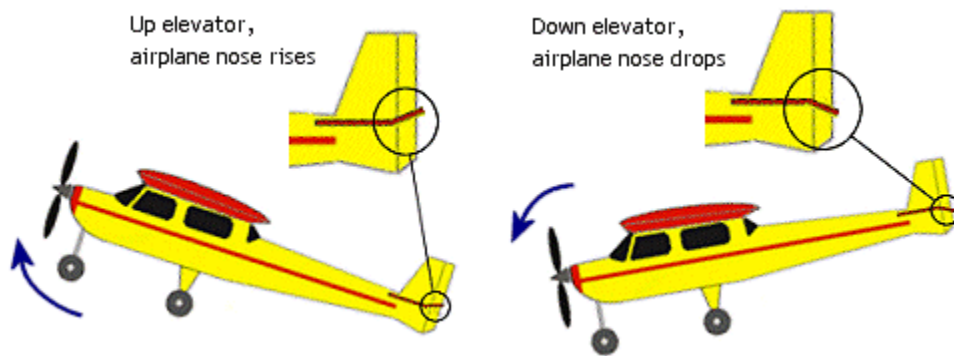
using up elevator. Conversely, pulling back the throttle will cause the airplane to sink before the speed reduces.

Using throttle/motor power in this way is the correct way to fly your RC airplane, but many pilots just rely on elevator inputs to adjust altitude and rates of climb and descent.

The Elevator:

The elevator is the horizontal section of the tail on the plane. It is hinged and controls the horizontal pitch attitude of the airplane, in other words whether the nose rises or drops.

When the elevator is in the up position (upward deflection) the nose of the airplane is forced to point upwards, and with the elevators deflected downwards then the nose is forced downwards.

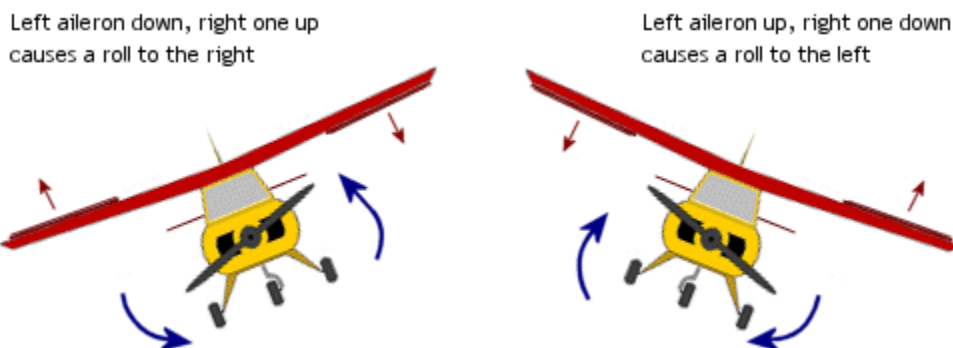


Up elevator, airplane nose rises. Down elevator, airplane nose drops.

The elevator is commonly used in conjunction with the rudder and/or ailerons when making a turn to maintain the airplane's altitude. A small elevator input helps keep the plane from losing some altitude when turning.

The Ailerons:

Ailerons control the roll of the airplane about its longitudinal axis (imagine a straight line running from the front to rear of the airplane)



Ailerons come in pairs and are found on the trailing (rear) edge of the wing, and they work opposite to each other. When one aileron moves up, the other one moves down and vice versa.

Left aileron down, right one up causes a roll to the right

Left aileron up, right one down causes a roll to the left

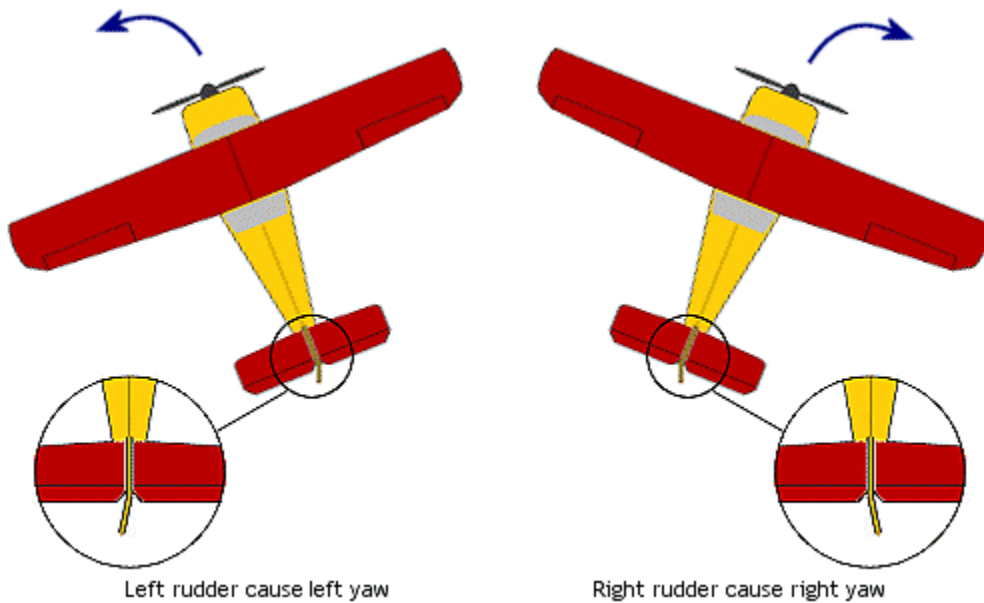
When used to turn the plane aileron input is applied first to roll the plane in the desired direction, and then up elevator, and/or rudder, is applied to pitch the nose around in that same direction; the end result is a banked turn. Ailerons are also used in many aerobatic maneuvers where rolling the airplane is necessary.

The Rudder:

The rudder is the hinged section of the fin, also known as a vertical stabilizer, at the rear of the airplane. It is used for directional control by changing the yaw of the airplane and works in a positive manner i.e. moving the rudder to the left causes the airplane to turn left and vice versa.

Left rudder causes left yaw

Right rudder causes right yaw



Applying rudder makes the nose of the airplane point to the left or right, but rudder alone does not make the airplane roll like ailerons do. It is actually the dihedral, or the upward 'V' angle of

the wing when viewed from the front, that makes the plane roll when rudder is applied; a plane with very little or no dihedral will have a much flatter turn when rudder is applied.

Rudder is also very important on the ground, it is the one control that will keep your RC airplane tracking straight during a takeoff run or landing roll. Nose wheels are often connected to the rudder making the model steerable and ground handling much easier.

The trimming function:

All RC transmitters, with the exception of the cheapest toy ones, have a function that allows you to 'trim' your model before or while it is being flown.

Small trim levers, also called trim tabs or simply trims, are located adjacent to each stick. One for each direction in which the stick moves. The trim levers have exactly the same effect as the main sticks, only to a much finer degree.



The trims fine tune the servo deflection for control surfaces or the motor idle speed of the model. With RC aircraft, the aim of trimming is to get your model flying as straight and level as possible with the main transmitter sticks in their central positions and with no input from you.

Throttle Cut:

The throttle cut feature allows a measure of safety when setting up your RC model. Example: you are installing/hooking up the battery or bringing your model to the flight line to fly. Using the throttle cut feature helps prevent an unwanted throttle activation preventing injury. The throttle cut option is in the menu of most transmitters. It allows you to assign a throttle cut switch on the transmitter to shut off the throttle. When the throttle cut switch is engaged no throttle function is allowed. When the throttle cut switch is activated, the throttle works normally. The throttle cut feature is a very important safety feature that all model airplanes should use. However, it is only useful if the operator uses the feature.