

Glossary (R-Z)

R S T U V W X Y Z

R

RPM How fast something turns. It means Revolutions Per Minute. It is both singular and plural.

Receiver (Rx) The radio unit in the airplane which receives the transmitter signal and relays the control to the servos. This is somewhat similar to the radio you may have in your family automobile, except the radio in the airplane perceives commands from the transmitter, while the radio in your car perceives music from the radio station.

Relative Wind Direction that the air molecules strike the lead-ing edge of the wing.

Reflex If a wing has an airfoil that curves down from the high point, and then curves back up, it's said to be "reflexed". Reflex is the size of that reverse curve.

Resonance This is the increased vibration (or amplitude of oscillation) of system when acted upon by a force whose frequency is close to or equal to the normal frequency of the system. When the resonance of many parts of a machine are in synch, the whole machine will vibrate at a greater rate and can be damaged. Resonance can cause difficulties in an aircraft, particularly when using a vibration mount with an improperly balanced propeller/spinner. For helis: Keep in mind that a helicopter has many rotating parts, and they all cause resonance. The helicopter will need to be tuned to reduce the amount of vibration.

Retract Servo Specifically used for mechanical retracts. It is a non-proportional servo which only moves 180 degrees. That is to say this servo is either "off" (gear up and fully locked) or "on" (gear down and fully locked). No ATV, EPA, or AST adjustments can be made on these servos because they are not proportional. The linkage must be set up properly to allow this servo to operate at its full range and do its job-securing your model's landing gear in a gear-up or gear-down position.

Retracts Short for retractable landing gear. Wheels and struts that fold up into the airplane to get them out of the airstream and present less resistance to the airflow.

Revolution Mixing The function of the radio which mixes throttle to rudder, preventing the rotation of the helicopter during throttle increase or decrease.

ROAR Radio Operated Auto Racing. National body to standardize and sanction R/C car and truck racing.

Roll (maneuver) The airplane keeps the nose pointed in one direction while it rolls over on its back and then upright again.

Roll Axis The airplane axis controlled by the ailerons. Roll is illustrated by holding the airplane by the nose and tail. Dropping either wingtip is the roll movement. This is used to bank or turn the airplane. Many aircraft are not equipped with ailerons and the Roll and Yaw motions are controlled by the rudder. This is one reason why most trainer aircraft have a larger amount of dihedral.

Rudder Hinged control surface located at the trailing edge of the vertical stabilizer, which provides control of the airplane about the Yaw axis and causes the airplane to Yaw left or right. Left rudder movement causes the airplane to Yaw left, and right rudder movement causes it to Yaw right.

Rudder Offset In radios with idle up functions, this specifies the amount of tail rotor pitch in the different idle up conditions.

Rudder-to-Aileron Mix used to counteract undesirable roll which often happens with rudder input, especially in knife edge, also called roll coupling.

Rudder-to-Throttle This heli mix adds a small amount of throttle to counter the added load on the main gear from increasing the pitch of the tail blades, helping to maintain a constant headspeed during rudder application. (This is a minor effect and is not a critical mix for most helicopters.)

Ruddervator Ruddervators are on a v-tail. Both of the ruddervators move up and down for pitch control and both move left or right for yaw control.

Rx Abbreviation for receiver.

S

SMT = Surface Mount Technology Ultralight, solid-state components which offer greater vibration resistance and reliability.

Seaplane An airplane that has floats, or pontoons, attached to allow it to land on water.

Servo The electro-mechanical device which moves the control surfaces or throttle of the airplane according to commands from the receiver. The radio device which does the physical work inside the airplane.

Servo Control Arms Servo Control Arms are the plastic output horns which are mounted to the output shaft on your servos. These come in various sizes and styles for different control applications. Most servos will come with an assortment of arms so you can customize to your own specific control needs.

Servo Reversing Reverses the rotation of a servo with the flip of a switch. Adds ease and flexibility during installation.

Servo Output Arm The removable arm or wheel which bolts to the output shaft of a servo and connects to the pushrod.

Servo Reversing Used to reverse the direction of a servo to ease installation and set up.

Shot down A "hit" that results in a crash landing. Sometimes caused by radios miles away.

Slats Moveable surfaces on the leading edge of the wing that helps airflow in low-speed flight. They enable the wing to fly at lower airspeeds than without them by directing the airflow over the wing and preventing separation of the airflow. Basically, they are retractable slots. All modern jetliners have slats, which open when landing flaps are lowered. Some aircraft intended for very short takeoff and landing have slats that open and close automatically, depending upon airspeed and angle of attack.

Slip A maneuver where the airplane's controls are used to make the fuselage fly at an angle to the line of flight. This causes a tremendous increase in drag, and allows an airplane without landing flaps to increase its angle of descent without picking up a lot of speed.

Slipper Clutch This is another special unit that is attached to the autorotation clutch will let the main blades turn the tail rotor when the engine is off or in "Hold". The difference between this and a "Constant Drive Clutch" is that this one will "Slip" a little so the tail rotor while spinning will not load the main rotors as much while in the "Hold" function doing a "Autorotation".

Slop Unwanted, excessive free movement in a control system. Often caused by a hole in a servo arm or control horn that is too big for the pushrod wire or clevis pin. This condition allows the control surface to move without transmitter stick movement. Also, see flutter.

Slot A specially-shaped slot in the wing just behind the leading edge. This directs airflow from below to the top of the wing, and helps low-speed flight by delaying the stall. Because they are permanently-mounted, they do add drag. See also "Slats"

Slow Roll A very slow version of the roll.

Snap Roll A type of rolling maneuver that is very quick and violent. It's basically a spin where the flight path is in any direction chosen by the pilot. Improper speed control during a landing approach can also make the model snap over on one wing and enter a spin. Since it's close to the ground, there's not enough room to recover, and a crash results.

Snap Roll Button This feature is found on more complex radios and is used to perform a snap roll maneuver by simply pressing one button. The function is usually programmable to give a combination of rudder, elevator and aileron control.

Snap Roll Switch Combines rudder, elevator and aileron movement to cause the aircraft to snap or spin on the flip of a switch.

Solo Your first totally unassisted flight that results in a controlled landing.

Span, also "Wingspan" The widest straight-line distance between the two wingtips.

Speed Brakes Large panels that fold out of the aircraft structure to provide a lot of extra drag to the air. They are not part of the wing structure, but are usually mounted on the fuselage. Military jets most often have speed brakes, which fold out of the fuselage. Some airliners use spoilers as speed brakes when at altitude.

Speed Control An electronic device that functions as a throttle for an electric motor. A speed control controls the speed or rpm of an electric motor.

Speed Flap The middle control surface on a 6-trailing-edge-surface glider or the inboard control surface on a 4-surface glider.

Spin A maneuver where at least one wing is stalled and the two wings are operating at very different angles of attack. This causes the airplane to rotate around its middle while it descends at a high rate of speed. When it's done on purpose, it is a precision maneuver, with the pilot trying to get the airplane to rotate an exact number of turns from entry to exit. When it's done accidentally, it can easily result in a crash. Many models crash when the pilot enters an accidental spin too close to the ground. This is caused by improper speed control during the landing approach.

Spinner The bullet-shaped fairing on the nose of the airplane around the propeller. This smooths the airflow around the propeller hub and also makes the airplane look much better.

Split-S Basically a reverse Immelmann. The airplane rolls onto its back, and then the nose comes down to finish a 1/2-loop. The direction of flight is changed 180°.

Spoiler(s) Control surfaces on the wing that destroy lift. They "spoil" it. They are used on sailplanes because they can steepen the very flat glide of the aircraft, which makes landings much easier. On full-size

aircraft, spoilers are also used to kill lift on landing to make sure the airplane is firmly on the ground. They also add a lot of drag to help with aerodynamic braking.

Stabilator Stabilizer+elevator, also called full-flying tail. Stabilizer incidence controlled by pilot in lieu of an elevator.

Stabilizer The Stabilizer is the fixed horizontal surface at the rear of an aircraft. It provides pitch stability for the aircraft.

Stall What happens when the angle of attack is too great to generate lift regardless of airspeed. (Every airfoil has an angle of attack at which it generates maximum lift-the airfoil will stall beyond this angle).

Strut Basically this is a supporting member. A wing strut supports the wing, and goes from the fuselage to the wing. Cabane struts are on biplanes, and support the upper wing over the fuselage. A landing gear strut is the portion that holds the wheel assembly to the airplane, and away from the wing or fuselage.

Sub-Trim This is a trim function on many computer radios, allowing trim function during set-up, and still allowing the full trim function in flight.

Switch Harness This switch is commonly located on the fuselage and governs the on/off mechanism for the flight pace. Tachometer. A device that measures the engine's RPM (rotations per minute) by counting light impulses that pass through the spinning propeller.

Symmetrical Wing A Symmetrical Wing airfoil is curved on the bottom to the same degree as it is on the top. If a line was drawn from the center of the leading edge to the center of the trailing edge the upper and lower halves of the airfoil would be symmetrical. This is ideal for aerobatic aircraft and most lift is created by the angle of incidence of the wing to the flight path.

T

Tachometer An optical sensor designed specifically to count light impulses through a turning propeller and read out the engine RPM.

Taildragger The nickname of an airplane that sits on its tail with the two main wheels in front and a tailwheel in the rear.

Taileron Stabilator with collective and differential actuation.

Tailskid On old World War I type aircraft, or pioneer-type aircraft, there was no tailwheel. A wooden skid was used to support the tail of the airplane. While this helps slow the airplane during landing, it is useless as an aid to steering on the ground. The real aircraft with tailskids had to be maneuvered on the ground by ground crews, who put the tail on a small cart and towed the airplane where they wanted it. For small distances, the tail was picked-up by hand and the airplane pushed into position by the ground crew.

Tailwheel The small wheel at the tail of the airplane. This is found on the type of airplane that have the two large wheels in the front, and the small one in the rear. The airplane sits on its tail.

Thermal Rising body of hot air that can take a sailplane to a great height.

Thread Locker A liquid that solidifies; used to prevent screws from loosening due to vibration.

Throttle The control that allows the pilot to change the speed of the engine. In a car, the "gas pedal" is actually the throttle control for the car.

Throttle Curve The programming function of the radio which allows throttle operation to be adjusted to meet the modeler's specific needs at various points along the throttle movement. Particularly useful with 2-stroke engines in providing linear throttle response at the various points of throttle application. For helis: Aids in setting the hover point, and end points of the throttle in the collective mix.

Throttle Hold A radio function which locks the throttle at a fixed point while a switch is activated. This function is used to hold the throttle in an idle. Useful when starting, as well as for auto rotations.

Throttle Stop Screw Screw for setting the lower limit of the throttle movement

Thrust The forward force provided by the airplane's engine. This is the force that drives the airplane forward.

Torque The force which tends to cause rotation.

Torque Rods Inserted into ailerons, these rigid wire rods run along the wings' trailing edge, then bend downward and connect to the pushrods.

Tow-hook The tow-hook is a small metal hook mounted on the bottom of the glider fuselage at approximately the center of gravity and to which the hi-start or winch is connected.

Trailing Edge (TE) The rearmost edge of the wing or stabilizer.

Trainer Airplane A model designed to be inherently stable and fly at low speeds, to give first-time modelers time to think and react as they learn to fly.

Trainer System Allows trainer to link radios with a student via a cord, and to instantly take control of student's craft in-flight. The 8U system has special training features available.

Transmitter (Tx) The hand-held radio controller. This is the unit that sends out the commands that you input.

Tricycle Gear The landing gear arrangement where the airplane has main gear and a nose gear.

Trim Lever Slides used to adjust control surfaces during flight.

Tx Abbreviation for transmitter.

U

Undercamber This means that the lower surface of the wing has a hollow curve when observed from front to back. A thin wing with a high camber will be undercambered.

V

V-Tail A V-Tail is a special tail surface configuration where the horizontal stabilizers and elevators are mounted at an angle between 30 and 45 degrees in a V-shape and the vertical fin is eliminated entirely. The stabilizers provide stability in both pitch and yaw while the moveable surfaces provide directional control in both pitch and yaw.

V-Tail Mixing Used when there is a V-Tail on the aircraft rather than the conventional elevator and rudder. Each control surface of the V is connected to a separate servo. Operating the elevator control stick will move both surfaces up for back stick or both surfaces down for forward stick. Moving the rudder control stick left will move the left surface of the V down and the right surface up. Moving the rudder control stick to the right will move the left surface of the V up and the right surface down.

Variable Trace Rate (VTR) This radio function is similar to exponential except it uses two linear responses to determine the servo sensitivity on the first and second half of the control stick movements.

Ventral Fin A small vertical surface on the bottom of the aft fuselage. Usually a long, slim triangle that is narrow at the front, and widens toward the rear. It usually ends at the rudder hinge line.

Vertical Stabilizer The vertical surface of the tail gives the airplane stability while in flight.

Vertical Fin The non-moving surface that is perpendicular to the horizontal stabilizer and provides yaw stability. This is the surface to which the rudder attaches.

W

Washout An intentional twist in the wing, causing the wing tips to have a lower angle of attack than the wing root. In other words, the trailing edge is higher than the leading edge at the wing tips. Washout helps prevent tip stalls, and helps the "PT" family of trainers recover, hands-off, from unwanted spiral dives.

Wheel Collar The round retaining piece that anchors wheels in place on the axle.

Wheel Pants The large fairings used to streamline the wheels of an aircraft that has non-retracting or "fixed" landing gear (so-called because it's "fixed" in place).

Wing Because wings provide the primary lift force on an airplane, adjustments to the wings affect the airplane's movements while in flight.

Wing Area The Wing Area is the total surface area of the wing of the aircraft, usually calculated by the wingspan times the wing chord, although more complex calculations are used on unconventional wing plans.

Wing Chord The Wing Chord of an aircraft is distance from the front or "leading edge" of a wing to the back or "trailing edge".

Wing Loading Wing loading is the weight of the aircraft divided by the wing area. It is designated ounces per square foot.

Wing Seating Tape Wing seating tape is mounted on the fuselage wing saddle where the removeable wing fits and isolates the wing from vibration as well as to form a seal to keep exhaust gases from entering the structure.

Wing Span The maximum distance from wingtip to wingtip.

Wing Tip The very outer end of a wing.

Winglet A small vertical surface at the tips of the wings. They help direct the turbulent airflow that all wings have at the tips. They make the wings more efficient.

Y

Yaw The nose-left and nose-right movement of the airplane. This is controlled by the rudder.

Yaw Axis The airplane axis controlled by the rudder. Yaw is illustrated by hanging the airplane level by a wire located at the center of gravity. Left or right movement of the nose is the Yaw movement.

Z

Z-Bend The wire ends of pushrods have Z-shaped bends, which attach to the servo.

Z-Bend Pliers Used for crimping wire ends into Z bends.