

Introduction



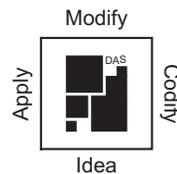
The Mission: To instruct each and every person to solo in 5 days or less.

DAS System: 1. Feature only the essentials required to solo well. 2. Introduce each step in the sequence as it will occur during solo. 3. Once each step is accomplished, add another progressive step. 4. Link it all together. 5. Refine.

I, David A. Scott, developed this *Primary Flight Training* system by bringing to the forefront and structuring the most common approaches shared among all R/C pilots who fly and learn with the greatest control and ease. That is to say, all those who learn to correctly manage their priorities and *know* what to expect when they fly. Thus, we will begin by outlining the fundamental components/building-blocks required to solo, and put aside the theories and opinions that have not proven essential to learning to fly solo.

Solo Requirements:

- A good airplane and airplane setup.
- Understanding control input effects upon flight.
- Control of procedure turns and turn adjustments.
- Control of straight lines and course adjustments.
- Visualizing flight paths and positioning.
- Ground references.
- Altitude control.
- Takeoff.
- Landing setup.
- Landing.



Outline of Instruction

The specific techniques featured in this program were developed from observing *why* experienced R/C pilots fly with great ease. All beginners initially feel overloaded when trying to react to ever changing flight conditions, yet when an experienced pilot flies, control of the airplane is mostly routine and/or automatic. Instead of reacting to the airplane every time a turn is performed for example, an experienced pilot repeats the same turn control inputs each time and the airplane predictably and consistently follows along. I realized that if a novice's attention was focused on duplicating those same fundamental control inputs, he or she would experience the same success! From all my observations and experience, I can sum-up the keys to successfully learning to fly in the shortest amount of time are:

-  Setting up a trainer plane so that the flight responses correspond as close as possible to the control inputs.
-  Focusing the pilot's attention on *controlling* the airplane, not merely reacting to it.
-  Specifically, a novice should focus on *how* he applies his control stick inputs with a clear understanding of *what* the inputs are going to tell the airplane to do beforehand.
-  Once the basic control inputs of turning and maintaining straight lines have become routine, place them in a well ordered and predictable solo sequence, and practice.

 **DAS System II:** Understanding *why* and *how* experienced flyers fly with greater ease, and with that as the goal, applying those same successful practices to the novice.

1. *Knowing* how to fly inspires confidence and maximizes effective practice.
2. Establish a routine of control inputs to turn and fly straight lines.
3. Position the turn and line results into consistent flight patterns through solo.

About the Manual



WARNING: The following course syllabus was developed and used for more than two decades teaching pilots to solo in a week, however it is not a substitute for an instructor! Dual instruction from a qualified instructor should be considered mandatory.

The objectives of this flight training manual are: To organize a logical lesson sequence and present the information in a way that can be quickly accessed while studying at home or practicing on a simulator or at the flying field — hence, each page can stand on its own and features a summary Key Point To Remember (KPTR) at the bottom to aid retention.

Instructor’s practice note: Each practice step facilitates the next, until solo is achieved. If you experience difficulty accomplishing a specific step, the solution will often lie in refocusing on the area of practice that precedes the difficulty and reaffirming your confidence and foundation to propel you into and beyond the next step. For example: Practicing many landings produces only minimal gains. Good landings are actually the *result* of paying attention to completing the turn that sets up a landing already lined up with the runway—thereby facilitating easier better landings.

From its inception, the 1st U.S. R/C Flight School has been driven to learn from its experience. This teaching system is the culmination of that which has proved to universally work best training hundreds of beginning R/C flyers with the fundamental goals of solo independence, good habits, and the exclusion of mishaps (similar to the full-scale methodology of focusing on proper execution, versus mistakes). Regarding an interest in diverse R/C modeling concepts, equipment, or flight and practice theory, it is highly recommended that you join an R/C flying club.





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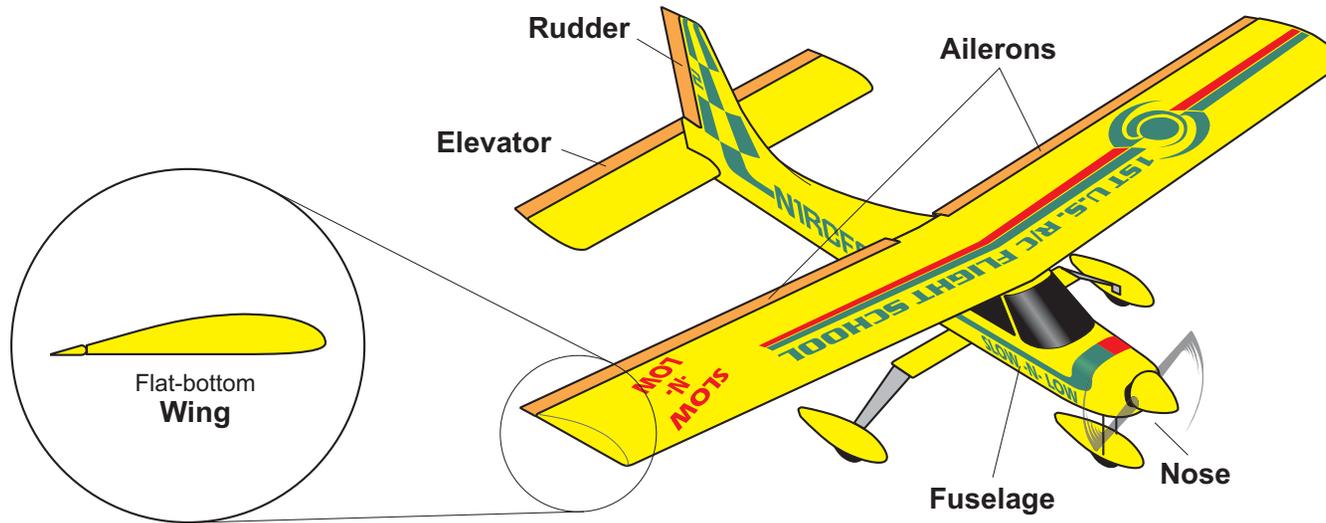
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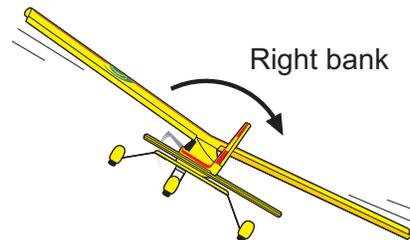
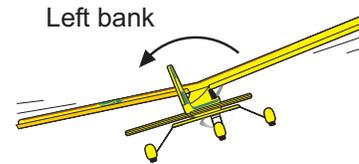
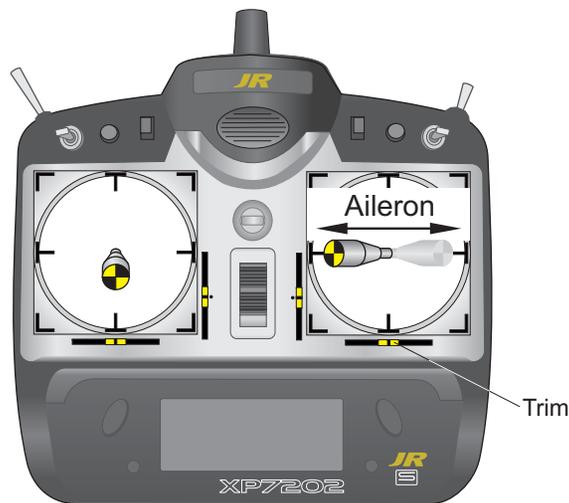
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Preliminary Basic Aileron, Elevator, and Rudder Effects



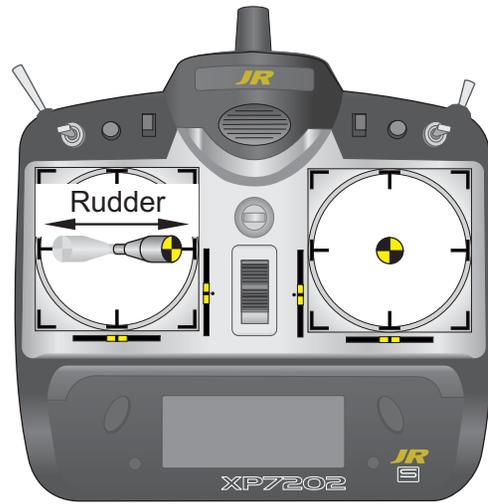
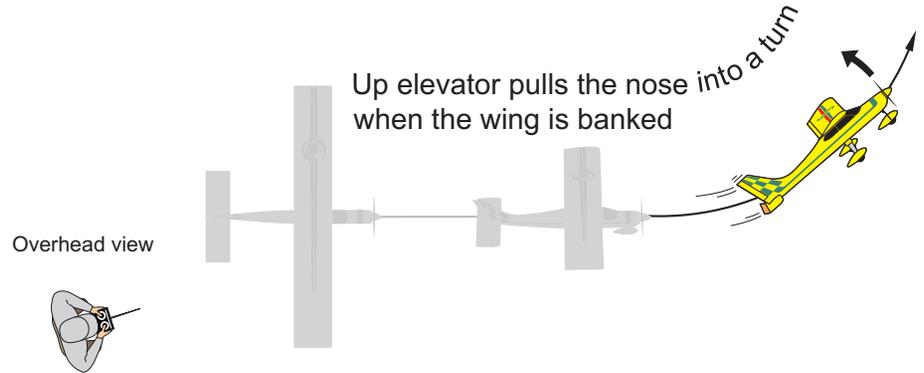
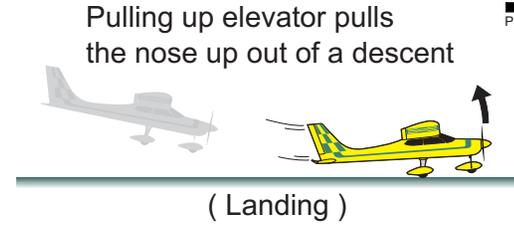
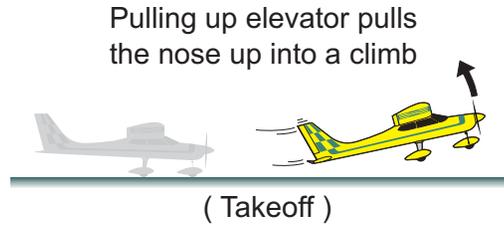
Aileron inputs bank the wing right and left, and also return the wing back to level.



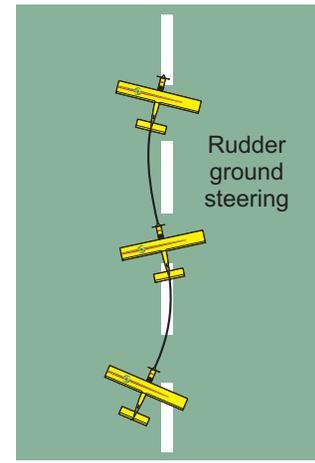
The plane will continue to bank or roll as long as the ailerons are deflected. Neutralizing the ailerons simply stops the response, but does not return the wings to level. Returning the wings to level typically requires another aileron input.

Ailerons bank the wings right and left. They are applied to initiate turns, and to keep the wings level to fly straight lines.

Pulling up elevator pulls or pitches the nose up.



Rudder controls left and right steering on the ground along with the nose-gear. Rudder can also be used to keep the fuselage straight in flight.



Elevator pulls the nose up when the wings are level, or pulls the plane into a turn when the wings are banked. Rudder keeps the body of the plane straight in the air, and steers the plane on the ground.

Primary Trainer Airplane Flight Characteristics

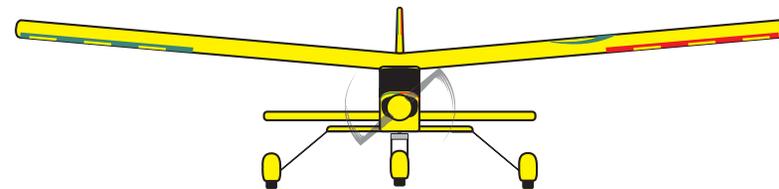
Note: The same flying techniques are used to control most types of airplanes regardless of size, but bigger is usually better:

- Larger models appear to fly slower and therefore provide the pilot more time to think;
- Larger models increase visibility at greater distances;
- Ultimately, the primary advantage of flying larger models is greater stability in windy conditions!

As a rule: How quickly an airplane responds to control inputs is a function of how far the control surfaces deflect—regardless of whether the model is small, large, high or low performance.

After setting the control throws to the recommendations of the plane's manufacturer, the primary features dictating each model's flight performance and the skills required to fly it are: Wing plan-form or shape, wing area and length, airfoil and wing thickness, dihedral (the shallow V angle of the wing as viewed from the front), and the wing's location on the fuselage.

A primary trainer (beginner) plane features *positive* stability. This type is designed to lessen or forgive the result of pilot errors (even hands-off recovery given enough altitude). This type tends to fly slower and allow the pilot some hands off flight stability when the airplane is level or near level flight—due to its larger wingspan, wing airfoil, and wing placement.



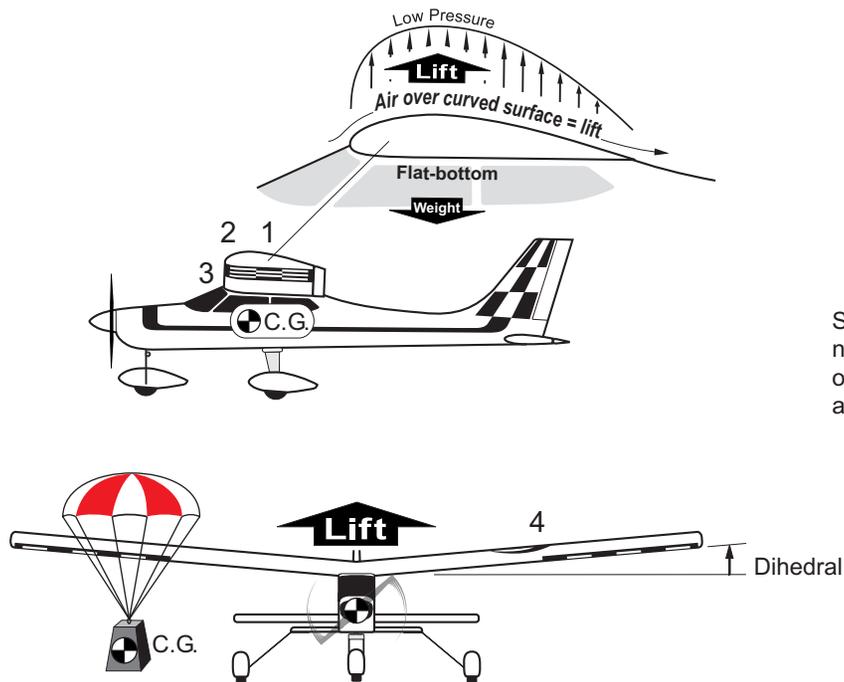
Primary Trainer Airplane Design Features



1. **A flat-bottom wing:** When only the top surface of the wing features the curvature that generates wing lift (the low pressure vacuum on top of the wing that supports the airplane's weight), the plane is well suited to maintaining upright level flight at slower speeds.

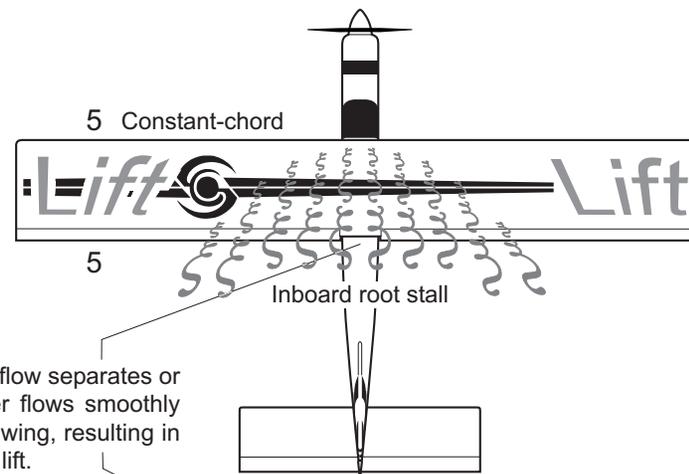
2. **A thicker airfoil** increases the degree of curvature and wing lift to allow flying at even slower speeds.

3. **A high wing location:** Placing the wing high on top of the fuselage places the lift support well above the plane's center of gravity or C.G.. Like a parachute supporting a man, high wing airplanes inherently try to remain upright.



4. **Wing dihedral** primarily improves upright stability by increasing the overall placement of the wing higher above the C.G..

5. **A constant-chord (width) wing:** When this wing stalls (loses lift), the stall or disrupted airflow inherently originates in the center root of the wing, while the airflow remains smooth and thus continues to provide lift out toward the wing tips. A *root stall* results in the airplane remaining controllable during a stall and produces a gentle sink or *mush* (versus falling out of the sky) when flown too slow.



KPTR: The primary features of a good primary trainer are its flat-bottom airfoil, high wing placement and constant-chord.