



Simulator Training Guide

Revision 0

Independent Simulator Training Study Guide

Note

RC flight simulators have evolved into an excellent tool to help the student learn the above items without risking the student or instructors actual airplane. Simulators are extremely realistic and the aircraft in flight simulators approximate the flight characteristics of actual RC aircraft almost exactly. Best of all, if you crash, simply push the reset button and start learning again immediately. No repairs and no expensive replacement parts required.

Note

For the Simulator training, only a portion of the manual “One Week to Solo” will be used. However we highly recommend that in due time the student takes the time to review portions of the manual already covered in your Ground School session. Also, there other portions of the manual that contains valuable information.

“One Week to Solo” by David A. Scott

This manual is directly available from “1st U.S. RC Flight School” at www.rcflightschool.com or www.amazon.com

LoveAir RC Club recommends using the “RealFlight” simulator offered by Horizon Hobbies at www.horizonhobby.com

The “RealFlight” simulator requires the following to operate:

- Compatible PC desktop or laptop with Windows® 7, Windows 8 or Windows 10
- Internet connection to download the Steam® Client and RealFlight® software
- Spektrum™ InterLink® DX Simulator Controller or a compatible DSM2®/DSMX® equipped transmitter with a Spektrum wireless dongle.



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Note

It is recommended to choose the same aircraft on the Simulator as the one the student will be using as a Trainer or an aircraft of similar design and flight characteristics. The air field should resemble as closely as possible the Drake LoveAir RC Club flying field.
(Paved Runway/sparse trees and vegetation)

Note

As the title of the training manual implies, it is possible to complete the Simulator Training in one week. This requires the student to dedicate a portion of each day for five days straight to Simulator Training. Page C-32 in the Training Manual shows the five day sequence required to complete the simulator training.

It is up to the student how much time is actually spent on the Simulator Training. However, it is important to develop full proficiency on the simulator prior to the student's first flight on their actual airplane. The first flight on the student's airplane will be based on the solo flight in Section K of the Training Manual. Proficiency on the Simulator reduces the likelihood of crashing during the solo flight.

The focus of the training program is to teach the student to takeoff, fly the pattern (both directions) and land successfully. Once the student is capable of solo flight, it will be possible for the student to develop aerobatic skills, alternate flight patterns and fly more advanced aircraft on their own using the simulator and their own airplane.

1. Ground School.

- 1.1. As a good review - Read Section A (A1 – A15) in “One Week to Solo”.
- 1.2. It is recommended to skip Section B (B-16 – B-25).

2. Learning to fly.

- 2.1. Read Section C (C-31 – C-47) in “One Week to Solo”.
- 2.2. Using a Transmitter or Interlink Controller practice finger positioning on the sticks.
(Page C-35)
- 2.3. Practice Stick inputs described on Pages C-38 – C-47 in the Training Manual using the transmitter with correct finger positioning on the sticks until movements are comfortable.
 - Aileron Bump
 - Procedure Turn



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- Turn Restart

Note

In the Training Manual, The last item learned is the Takeoff. However, in order to practice on the Simulator it is necessary to takeoff in order to fly the airplane. Therefore, the first simulator exercise is to practice takeoffs on the simulator. Takeoffs are relatively simple to accomplish and can be easily accomplished by the student early in their training.

3. Takeoff and entering the pattern

- 3.1. Read Section G (G-74 – G-85) in “One Week to Solo”.

Note

The Training Manual assumes that the plane has rudder mixed with aileron like the trainer aircraft used at “1st U.S. RC Flight School”. Therefore, the Manual shows using the right stick for ground steering. This mixing is not included in the trainer aircraft on the simulator. It is also not included on the student’s trainer airplane.

Use the left stick (Rudder and Nose Wheel) on the transmitter for ground steering.

- 3.2. Practice takeoffs and entering the pattern as shown on Pages G-78 – G-81 in the Manual on the simulator until takeoffs can be executed consistently and comfortably.
- 3.3. Practice taking off in both directions.
- 3.4. When takeoffs are comfortable add a 5 -7 mph headwind and crosswind up to 45 degrees to the runway and practice.

4. Comfortable View and Warmup Flights

- 4.1. Read Section D (D-48 – D-55) in “One Week to Solo”.

Note

In order to maintain orientation with the runway on the simulator, the student must understand the position of the runway with respect to their virtual self.

Always remember that the runway is located directly in front of you on the computer screen when you takeoff from the runway. It is important to not fly the airplane behind yourself or overfly the pits and spectator area. Practice keeping the airplane past the outside edge of the runway and center your flight pattern with your virtual self.

Use ground references to help keep the airplane oriented correctly in the pattern. This is



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best accomplished by maintaining the altitude of the airplane at tree top level so that the ground references (brush, trees, buildings and mountains) are visible.

Taxi the airplane to the end of the runway (both ends) and pick out ground features that align with the center of the runway to use as a reference.

Pick a turnaround target on each end of the flying area to use as a reference for when to start and stop your turns.

Maintaining correct orientation with the runway and the flying area are primary criteria for your instructor to evaluate your flying ability on the simulator prior to your solo flight.

4.2. Takeoff on the simulator and trim the elevator so that the airplane will fly level at about $1/3 - 1/2$ throttle.

4.3. Practice flying the pattern on the simulator using the techniques in section D of the Training Manual.

- Do not hold the transmitter in a casual position while flying on the simulator. Use the technique learned in section C of the Training Manual.
- Use body rotation to maintain orientation with the airplane. Standing is recommended during all simulation work.

4.4. Add a 5 – 7 mph crosswind at 45 degrees with respect to the runway to the simulation and practice flying the airplane as a whole.

- Push away/Pull in.

4.5. Practice until proficient and comfortable flying the pattern in both directions.

5. Stage I Landing Preparation

5.1. Read Section E (E-56 – E-67) in “One Week to Solo”.

5.2. On the Simulator, practice flying the pattern closer in to overfly the runway.

- Keep the airplanes altitude at about tree top level to allow using landmark references.
- Use previously identified landmarks for the extended runway centerline.
- Use a landmark target to identify the location to start the turn from downwind to base leg and to final which puts final on the runway centerline.



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- Use your virtual self as a reference for the location of the runway. The runway is just in front of you. (keep the plane close in to you)

_____ 5.3. Add a 5-7 mph headwind and a crosswind to practice in those conditions.

- Adjust the turn location with respect to the landmark target to overfly the runway centerline with a crosswind.

_____ 5.4. Practice the pattern in both directions and with a crosswind in both directions.

_____ 5.5. Practice until proficient and comfortable flying the pattern in both directions.

_____ 6. **Stage II Landing Preparation**

_____ 6.1. Read Section F (F-68 – F-73) in “One Week to Solo”.

_____ 6.2. On the Simulator, practice flying the closer in pattern overfly the runway and lower the pattern until a landing is possible.

- Reduce the throttle to allow the airplane to descend
- Increase the throttle to allow the airplane to climb out.
- Keep the turns level.

_____ 6.3. When the approach looks good, land the airplane.

- Reduce the engine to idle.
- Remember to flare the airplane starting at about 3-5 feet above the runway to smooth the landing.

_____ 6.4. Practice until you can land the airplane on the first turn to final every time.

_____ 7. **Continue to improve the landing technique**

_____ 7.1. Read Section H, I and J (H-86 – J-105) in “One Week to Solo”.

_____ 7.2. Continue to practice landings on the simulator while honing your skills with the techniques discussed in sections H-J in the Manual.

_____ 7.3. Add 5-7 mph headwinds and crosswinds to the simulation and practice the landing techniques.

_____ 7.4. Practice landings in both directions.



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_____ 7.5. Practice until proficient and comfortable landing in both directions under various wind conditions.

_____ 8. Flying using SAFE Mode

Note

If the student intends to use SAFE mode on the initial flights on their trainer airplane, it is recommended that the student practice using SAFE on the simulator to become familiar with how the plane flies and is controlled using SAFE stabilization.

Caution

In the BEGINNER mode the airplane is essentially steered around the sky like a car, i.e., all the pilot has to do is hold the aileron control stick in the corresponding direction that they want the plane to go.

Flying in SAFE mode can be tremendously helpful to a beginner pilot on their initial flights on a new airplane. However, the pilot should switch to "Intermediate" Mode flying as soon as possible to prevent unlearning of good flight techniques.

_____ 8.1. Read the "One Week To Solo and Park Flying manuals addendum: Training on airplanes with gyro stabilization"

_____ 8.2. Activate the SAFE function on the practice plane on the simulator

_____ 8.3. Practice takeoff, pattern flying and landings using the SAFE function.

_____ 8.4. If the airplane is equipped with multiple SAFE modes, practice flying in "Beginner" and "Intermediate" modes.

_____ 8.5. Practice using the "Panic" function with the airplane in "normal" mode by putting the plane in various unusual orientations.

Note

Figure 8 turns are a great way to practice turns in both directions and test your ability to control the direction of the airplane.

_____ 9. Practice figure 8 turns

_____ 9.1. Use the turning techniques practiced thus far.

_____ 9.2. Maintain the altitude of the airplane at the same level throughout the maneuver.



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_____ 9.3. Keep the diameter of the turns the same in both directions.

_____ 9.4. Add a small amount of wind to the simulation and practice keeping the diameter of the turns the same by adjusting the bank angle during the turns.

Note

New and newly repaired airplanes often need trim in order to fly correctly. The simulator is a good platform to practice trimming an out of trim airplane for level flight.

_____ 10. Practice trimming the airplane

_____ 10.1. On the simulator use one or more of the trim switches to cause the airplane to be out of trim prior to takeoff and subsequent flight.

- For example, push the elevator trim tab forward several clicks to cause the airplane to nose down during flight.
- Push the elevator and aileron several clicks off center to cause simultaneous roll and pitch out of trim.

_____ 10.2. Use the trim tabs to correct the trim of the airplane in flight.

Note

The time has finally arrived for the student to contact an instructor for the next phase of your training. Either contact the Flight Instructor by sending an email to loveairnrc@gmail.com or contacting your Introductory Pilot Instructor.