

Burlington R/C Fliers Flight Training Program – Updated 11/2003.

I. Objectives:

- Provide Radio Controlled model airplane Pilot *instruction* for any Burlington R/C Fliers member who request training.
- Encourage beginners in the hobby to seek instruction.
- Encourage those members who can successfully take-off, fly and land to expand their skills.
- Provide an “instructor training guide” sop that a student may utilize any “program” instructor at the field.
- Provide uniform criteria for SOLO flight certification.

II. The flight training program:

A. Ground School

- Informal and non-mandatory
- Airplane construction
- Field Rules
- Safety (personnel, plane, field, flight)
- Engine tuning (gas)

B. Requirements for Solo certificate

(awarded by the instructor)

- Preflight check
- Frequency management
- Pit, field and flight safety
- Take-off with the pilot applicant on the flight line
- Double procedure turn
- Figure eight – constant altitude
- Loop
- Split “S”
- Roll
- Immelman Turn
- 360 circle at constant altitude
- Aborted landing
- Stall
- Landing pattern – both directions
- 3 landings – including 1 dead stick

C. Pilot Proficiency Check List – Checked by the Chief Instructor or designee (not a test)

- Preflight check
- Pit, field and flight safety
- Take-off
- Figure eight – constant altitude
- A loop, roll or other maneuver as appropriate to the airplane type at the discretion of the instructor
- Landing pattern – both directions
- Landing
- Simulated dead stick landing

III. Program Instructors will be able to do everything (at a minimum) in the Pilot Proficiency Check List

IV. Important Student Information

A. Damage to Equipment -

IMPORTANT: It must be understood by the student that the instructor will do his/her best to take-off, fly and land without damage to the student’s airplane or other property. However any damage to the model airplane for any reason or any accident resulting in the injury of persons or property resulting from a malfunction of the airplane or radio equipment or the inability of the instructor to control a poorly constructed and/or misaligned airplane while the instructor is trying to fly in a safe manner is the **SOLE RESPONSIBILITY** of the student or owner of the airplane and/or radio equipment.

B. Damage During Landing -

IMPORTANT: It must be noted that landings can be injurious to model airplanes. The instructor will do their best to return the airplane to the ground in the least possible damaging manner. However, the instructor is **NOT RESPONSIBLE** for any damage

Burlington R/C Fliers Flight Training Program – Updated 11/2003.

sustained in the landing. “Dead-stick” (no power) landings always put the airplane at greater risk.

C. Corrective Maneuvers -

IMPORTANT: The student must understand that the instructor may (by virtue of their experience) see a potentially hazardous flight attitude developing although the student may feel that they are in control. The instructor will take control back (via buddy box) or ask for the transmitter to fly out of this situation thus saving the student from jeopardizing the plane or spectators. With increasing “stick time” these situations will no longer occur.

- D. The student will be awarded a SOLO CERTIFICATE when the instructor feels that the student can take off, fly and land safely, and most important, that his flying will not be hazardous to other people at the field.

V. Student pre-flight checklist

- A. The airplane must be soundly constructed. The instructor will not fly your airplane if he/she believes some area to be marginal. It is advisable to have your airplane inspected by the instructor prior to bringing it to the field.
- B. The servos must be mounted in rubber grommets and servo rails must be plywood or hardwood or plastic. The servo arm screws must be tight.
- C. All linkages and pushrods must be rigid and without excessive play and firmly attached to the servos and to control surfaces.
- D. The engine must be firmly mounted and engine mounting bolts must have lock washers or some other means to prevent vibration loosening.

- E. The receiver and batter pack must be mounted in thick foam rubber or some other soft, vibration absorbing material. The packed receiver and battery must be prevented from moving around in the fuselage.
- F. If not specified in the kit, the control surfaces should have the following MAXIMUM movements a the trailing edge:
- Ailerons: ¼ inch up and down.
 - Elevators: 5/16 inch up and down.
 - Rudder: 20 degrees each way
 - Throttle: must be adjusted to completely close with the transmitter throttle stick and trim control fully down. The engine MUST shut off form transmitter control.
 - CG between 25% & 30% of the wing cord or forward of the specified point on the plans.
- G. Range check the radio with the engine running at full throttle and transmitter antenna collapsed.
- H. Transmitter and receiver batteries must have an overnight charge prior to each day’s flying, no matter how little flying (if any) was done the previous day.
- I. Bring to the field: (G) = Gas-powered
- Frequency pin for the flight board
 - Your transmitter frequency flag
 - AMA & BRC membership cards
 - Extra props
 - Spare rubber bands
 - Any special tools needed
 - A bag for your trash
 - Fuel and fuel pump (G)
 - Starter and starter battery (G)
 - Glow plug battery (G)
 - Spare glow plugs (G)
 - Fresh glow plug battery (G)
 - Rags or paper towels (G)
 - Spare glow plugs (G)
 - Fresh glow plug battery (G)
 - Plane restraint system (G)

Burlington R/C Fliers Flight Training Program – Updated 11/2003.

VI. Flight Controls

- A. The student should be familiar with the function of each of the flight controls of the transmitter and their effect on the airplane.
1. Engine/Throttle – NON-neutralizing – controls airplane speed via the engine. Throttle stick pulled back toward pilot (bottom of transmitter) will reduce the engine speed to idle. The throttle trim lever pulled fully back should shut off engine.
 2. Elevator - PITCH control SELF-neutralizing. Stick pulled downward toward the pilot (bottom of transmitter) will cause the elevator to go UP forcing the tail of the airplane down, nose up. The more stick is moved the faster the nose will rise. The longer the stick is held in any position the more the nose will rise. When the stick is let go or returned to neutral, the airplane will maintain the attitude it had, i.e., nose up. If the stick is held long enough the airplane will perform a loop.
 3. Ailerons –ROLL control - SELF-neutralizing. Push stick to your right and the airplane will roll or bank right. The more the stick is moved the faster the airplane will roll or bank. The longer the stick is held the more the airplane will roll. If held long enough, the airplane will do a 360 degree roll (and probably head toward the ground).
 4. Rudder - YAW control – SELF neutralizing. Beginners don't use this control in flying the airplane. If the airplane is at 3-channel (rudder, elevator, engine) then the rudder will yaw the airplane right or left. However, the greater the angle of dihedral in the wings, the more the rudder

will actually roll the airplane. The rudder servo is connected to the nose wheel in many trainers for steering on the ground.

- B. The student must respond to the instructor's verbal commands instantly.
- C. The student must understand that a verbal command to turn right is for the student to push the aileron stick to HIS/HER right. The student must not try to figure out which is the airplane's right.

VII. Instructors safety checklist.

DO NOT FLY AND UNSAFE PLANE.

- Are the servos and radio securely mounted with vibration absorbing material?
- Does the throttle close so you can shut the engine OFF in an emergency?
- Is propeller nut on tight? Use a 6" wrench (not larger).
- Check the control surfaces for proper motion and good hinges.
- Is the hinge line gap small? If larger than 1/32 inch the plane will not respond to small stick movements and thus will be jerky and hard to fly with loss of control at low airspeed.
- Do the surfaces move in the right direction?
- Are the surfaces tight with no excessive play? Flutter can kill an airplane in a hurry. An unsupported Nyrod can not control an airplane.
- Check for badly warped wings. Small warps can be lived with for a while.
- Check for rough balance. With the CG about 1/3 of the way back from the leading edge at the fuselage or forward of that, the airplane can be brought back to readjust; further back than that and

Burlington R/C Fliers Flight Training Program – Updated 11/2003.

you probably won't get the airplane back.

- Range check the radio with the engine at full throttle and antenna collapsed.
- Double check that the student knows the proper frequency control at the field and that the student knows their CHANNEL NUMBER.
- Be careful of old, wide band radios, leave two channels either side of the channel the radio is on.

VIII. Flight Instruction Guide

- A. Be patient, some people learn more quickly than others.
- B. The initial flights should be flown at a '3' mistake altitude, with ¼ to ½ throttle and the trims set for straight and level flight.
- C. These errors will always appear while learning to make turns:
 - In the turn the student will not get back to neutral aileron and the airplane will continue to roll and end up going straight down.
 - When completing a turn, the student will not push the aileron stick toward the down wing (as aircraft comes toward him/her), thus increasing the bank and end up going straight down.
- D. During the initial flights, the instructor should continually talk to the student, tell him/her which way to turn and which control to give (“bank right, neutral, now a little up”). The initial flights are to let the student get the feel of flying, but at no time should the airplane get behind the flightline. NOW is the time to develop good (safe) habits.

- E. After a couple of flights, the student should start doing large figure eights. He/she needs to get used to RIGHT and LEFT hand turns NOW.
- F. When giving flight directions avoid using “right” or “left”, better to say turn TOWARDS or AWAY from the field”.
- G. When the student can make level turns, and climbing turns on command and is making good progress with orientation, it is time to learn how to take off. The first take off should be after a couple of good flights when their confidence is up.

The Student should be told:

- The consequence of take-off stalls and holding up elevator during the climb out.
- That he must abort the take-off (by throttling full back) on the instructor's command or if the student thinks the airplane is heading towards the pits.
- Which way to turn the airplane after the take-off so the airplane will not fly over the pits.
- H. Landing should not be started until the instructor is absolutely sure that the student has the orientation problem licked. Hints on landing:
 - Begin by doing the landing patten up high, with each successive approach a little lower.
 - Each landing pattern must be flown like the airplane will land, i.e., throttle DOWN prior to the base leg, nose level or slightly down throughout the approach.
 - On the turn on to base leg and final, do not let the airplane get to level flight even though that is what the full-scale ones do. Keep the airplane in a slight bank so that the top of the wing can be seen. Too many models are lost on these two turns because the airplane is not

Burlington R/C Fliers Flight Training Program – Updated 11/2003.

level but is actually banking away from the field. Thus when the student (or pilot) tries to turn the airplane, he/she needs a lot more aileron than he/she thought and the wing goes into an aileron-turn stall resulting in a total loss of control – crash.

- The first landing should be a surprise to the student. During THIS pass the instructor doesn't tell him/her to throttle up but just lets the student land the airplane.