

Kawartha Lakes Radio Control Flying Club

Wings Program - Flight Training

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ADVICE TO THE STUDENT

Purpose

The purpose of this discussion is to help prepare the student for the process of learning to fly.

Introduction

Firstly, we welcome you to the fascinating world of Radio Control modeling. Perhaps your most important step was taken some time ago. This was your decision to invest some of your time and money in the idea of model aircraft. You may have wondered at that time whether this was a wise thing to do since you could not be sure that you would enjoy this business of flying model aircraft. Let us assure you that once you begin to operate your own model that there are very few experiences like it. Many thousands of modellers worldwide have found that this is not just a hobby, this is a lifelong passion.

If you are uncertain still about learning to fly, many clubs offer an introductory test flight using an Instructor's airplane.

Like all of life's experiences, learning to fly is an adventure into the unknown. You must approach flight training with a determined and somewhat aggressive attitude. This will be an exciting period for both you and the instructor who will be called upon to help you get started. You should be aware that it might take you some 10 to 30 hours to be proficient enough to fly safely on your own. An average flight is in the order of ten minutes. On a typical flying day, you can get as many as 6 or 7 flights safely. It is easy to see that you will need some 60 to 180 flights depending upon your natural ability. If you can get to the field only on weekends, you can expect that to learn to fly is not likely to be less than six weeks and is more likely to be in the order of four months, with flying weather also a major consideration. This assumes that you can be consistent in pursuing your objective and that normal learning problems and damage to your aircraft during this phase is minor and can be repaired within a couple of days. This can be a frustrating time for many beginners who quickly become aware of their lack of skill. You must persevere to pass this hurdle.

It is presumed that you are at the point of committing yourself and your aircraft to the ultimate test. Things may be very intimidating to you at this stage. You are about to try out an airplane that is a total unknown; and in which you have invested many of your personal dreams and ambitions.

The radio is likely to be new or untried; the engine is an unknown factor, even if you have run it a little on your model or in your backyard. You will certainly be apprehensive about damage to your model regardless that there may be aircraft identical to yours at the flying site that are working perfectly. Some of these aircraft at the field are immaculate works of craftsmanship and you may be tempted to compare these with your own humble efforts. Don't! The purpose of your first plane is to learn to fly. The superb finish and look of an aircraft are secondary to whether this same aircraft is in a flight-worthy condition. Our concern, and yours, should be over this factor.

At any flying field, you will be dealing with a group of strangers who may appear to be blissfully unaware of your existence, if not actually ignoring you. Do not let this discourage you! Each of these people went through much the same sort of thing as you are going through now. Moreover, each of these people was a stranger to the group at some point or another. A new modeler is a fledgling member of our "in" group and both MAAC and our clubs are pleased to see you at the field. That still does not mean that you will have much in common. The older and more experienced modellers are often into different phases of the hobby and may have progressed to having only a passing interest in trainer types of aircraft. This is deceiving since these same modellers will watch your progress very closely and you will be surprised by these same flyers offering their congratulations when you pass critical stages in your learning.

Your most important activity and concern at this point is probably regarding an instructor. This leads us to the purpose of this discussion. That is to tell you some of the things about what the instructor can, and perhaps cannot, do for you. Knowing some of these facts will help ease your concerns and will help in getting you started.

Administrative Details:

You should be aware of the things that you must attend to prior to commencement of your flying activities:

a. MAAC membership is mandatory. MAAC does not offer the benefits of MAAC membership to non-subscribing members of the public. Club charters and field insurance are provided on the basis that all individuals of a club are members of MAAC and thus the protection of MAAC insurance is extended to the individual modellers and the owners of the flying site. As a member, you are covered with several million dollars of liability insurance, which protects you, and the other members of the club from any incident that may occur.

b. Club membership: Clubs will have their own rule regarding whether non-club members may be entitled to use of the flying facility, and you will quickly become aware of the club stand on this matter. *(Note: Kawartha Lakes RC Flyers regular members may bring guests for a limited number of visits.)*

c. Mufflers: The MAAC rule is that all engines over 0.15 cubic inches must be equipped with a muffler. There are a variety of local variations of this rule which in some cases lowers this limit to 0.049 cubic inch engines. This may also be interpreted to mean that the muffler must include an expansion chamber and that flow-through-mufflers are not permitted. Baffle plate and exhaust extension types of mufflers have been specifically prohibited at some locations. Some relaxation of standards is sometimes permitted for scale aircraft due to the home-built nature of some of these muffler schemes, however, as a beginner you will rarely fall into the scale category. *(Note: Kawartha Lakes RC Flyers encourage the reduction of noise levels. Many modern engines come equipped with good mufflers. Baffle plate, Exhaust extension, and flow-through-mufflers, are seldom seen anymore. The flying of excessively noisy models at the field is prohibited. Excessively noisy models are those for which the noise level is above 98 dB at 3 metres.)*

d. Frequency control: Modern radios operating on the 2.4 GHz band do not need any special attention to frequency control to avoid interference.

Older radios on the 72 MHz and 27 MHz bands are prone to interfering with each other and attention to frequency control is important. These older radios are seldom seen at our field.

For the older radio systems, the MAAC frequency control system is highly recommended and should be in use at the flying site. Modellers should provide a pin to cover the frequency in use and two frequencies on either side of the operating frequency.

Beginners, or other club members for that matter, should be aware that their insurance coverage and the coverage of the field might not be valid if operation on illegal frequencies is permitted. *(Note: Ask your instructor to explain the system in use at the Kawartha Lakes RC Flyers field. Never turn on your transmitter without ensuring that the frequency is clear and in your control.)*

e. Beginners should familiarize themselves with the MAAC Safety Code, (<https://www.maac.ca/en/documents.php>), and the MAAC Guidelines for Flying Site Operation. (*and the Kawartha Lakes RC Flyers Code of Conduct.*) The intent is to ensure that you are aware of the basic rules that apply to flying safety from the outset so that you will become safe flyers and a credit to both MAAC and your club.

If you meet all these requirements, then you are ready to start the flight instruction part. Please do not expect assistance if you have not met these basic and mandatory requirements.

The Instructors Role in MAAC and the Club:

You must first understand that your instructor is a volunteer. The procedure used by clubs to select instructors is normally to have members of the club executive nominate individuals as prospective instructors based on two factors. The first and most important is the members flying ability. The second is the willingness of that individual to accept the responsibility of becoming an instructor for the club. At this point, the club asks the individual if he/she is willing to become an instructor. If that individual is willing to accept, then they are accepted by the club as an instructor and given a set of "Instructor" wings to identify these individuals at the flying field.

In assessing the instructor's ability, we do not expect the most proficient flyer in either MAAC, or the club to join the ranks of instructor. An instructor will be capable of handling a trainer type airplane that works reasonably well. There are some pilots or instructors at any field who will test fly your scale or super speed job or anything else you might possess, but this is not the job of the instructor for our purposes. Some of these instructors may not be willing to do the test flight on your aircraft since this is a difficult and often critical task, however, once the initial difficulties with the airplane are over, they can do all that is necessary to teach you to fly. Incidentally, you will remember these individuals for the rest of your life because of their importance to you.

It is equally important to realize that there are limits to the ability of everyone. Given a reasonable situation, the instructor will be able to pre-flight, test, take off, fly, and land your aircraft under control ensuring that there is no damage to the aircraft. An aircraft out of balance, unstable due to construction faults, engine malfunctions, and finally radio problems of various sorts, adds a great deal of uncertainty to any flight of an aircraft. Most problems with aircraft are experienced within the first ten to twenty flights as problem areas become critical leading to failure. Under these circumstances there is little that any pilot can do, but usually, if anything can be done, it will be done by the instructor. This may not prevent a crash, but it may lessen any damage caused.

Selecting Your First Model

You may have aspiration to fly a neat fighter aircraft such as a Mustang or Spitfire, or an aerobatic airplane like an Extra. Those types of models are harder to fly and are not a good choice for starting.

Your first model should be one designed as a trainer. They are much easier to fly and increase your chance of success. The newer ones quite often come with some form of stabilization system which again enhances the flyability.

We recommend that your first model be an electric powered trainer type.

As of April 2021, the Kawartha Lakes RC Flyers recommend the E-Flite Apprentice. If possible, get the BNF version, and purchase a transmitter separately, a Spectrum DX6E, NX6 or higher. Our experience is that the DXe radio that comes with the RTF version, and the similar DXs radios are difficult to work with and program, and offer limited potential for growth with the pilot. An additional battery is also a good idea. Other models are acceptable. Discuss your choice with an instructor.

Electric Models

Many models are electric these days, supplied with power from a Lithium Polymer battery (LiPo). They are a good choice as they eliminate the fuss and bother with engine fuelling, and the need to learn to properly adjust the engine. Although the LiPo batteries offer a great power to weight ratio, they can be prone to fire if not properly handled.

Keep in mind these safety rules for electric models:

- Always charge the LiPo batteries with a proper charger, outside on a fire-resistant surface.
- Turn your transmitter on before plugging in the aircraft battery.
- Always set your throttle to idle before plugging in the aircraft battery.
- Keep your hands, clothing, and body away from the propeller when plugging in the aircraft battery.
- Set a safety switch to disarm the throttle. (*Switch H on many Spektrum radios. Use "Throttle Cut"*)

Buddy Box Training

Most training is done with a "Buddy Box". This is a second transmitter that connects by wire or wirelessly with your transmitter. You hold one transmitter, and the instructor holds the other. This allows the instructor to take instant control of your model if there is a problem. This only works with comparable brands of radio. *Many of the Kawartha Lakes RC Flyers Instructors have Spektrum brand radios.*

The Wings Program:

The Club Wings program is a structured program, which has been developed to aid the beginner in achieving basic radio-control flight proficiency and encouraging that modeller to develop skills to achieve more than just a minimal flying level. This program has been refined over several years and under normal circumstances will bring the beginner to pilot standard in the shortest possible time.

You are not allowed to fly at the field without an Instructor unless you have passed the Wings Test.

To achieve a pilot rating, the student is expected to progress through several phases or steps to earning his pilot "Wings" or to demonstrate an equivalent capability.

Level I: Pre-flight. All aircraft are inspected during this step and all construction and equipment fitment problems are rectified before completing this level. The student is taught the basic Safety Rules and procedures.

Level II: Basic flying skills. This level includes all flying activity of basic manoeuvres. The student must display acceptable control in left- and right-hand circles or ovals. Students may be exposed to some advanced manoeuvres such as rolls, and loops and figure-8s. Students must be assisted by a qualified instructor and have achieved this milestone before Level III activities commence.

Level III: Preparation for solo flying activity. This level includes all other activities but has its main emphasis on take-off and landing.

Once the student has displayed acceptable safe control of the aircraft in take-off and landing in both directions, the instructor may test the student under solo conditions. If the student successfully passes the test given by a qualified instructor, they may be presented with their pilot wings to indicate that they are capable of unassisted or unsupervised flying activity.

Getting Started - Pre-Flight Inspections:

Your instructor should insist on pre-flight inspections of any aircraft that has not been passed at the level I standard. Even if your aircraft has been accepted by another instructor, your instructor may be unwilling to operate this aircraft. The reason for this is usually a lack of craftsmanship on your part. Some instructors are less concerned about this aspect than others. You should bear this thought in mind: If any instructor feels that you should change or rebuild some aspect of your aircraft, he is doing it from his knowledge or experience, which tells him that it needs to be done. He is protecting your investment to the best of his ability regardless of whether it means that you do not fly that day.

Pre-flight inspections of new models work from one end of the aircraft to the other, inside, and out. It must be acceptable in all areas. Hinges must be tested, glue joints tested for strength. Wings and fuselages for warp, the model for balance and a host of other things. If he can break the rudder off the fuselage with a simple test, for example, then it will break off in flight and will ultimately destroy the model. The pre-flight will test all mechanical aspects of your installation. If it does not pass the mustard, the instructor will not pass it or fly it. Period. (Note: *The Kawartha Lakes Flyers have a pre-flight inspection checklist*)

Radio checks are carried out on all new models before flight and should be repeated each time you arrive at the field as an important safety precaution. The instructions with your radio should tell you how to do this. but if you are unsure, then, on older radios, you can collapse your antenna to one segment (9-12 inches) and check to see that all functions work correctly, as you move away from the aircraft for a minimum of 20 to 30 good paces. If it will work to this rough minimum, it should be okay in the air. Once the radio range is known by this test, you should remember the distance as an important check, as to whether your radio is deteriorating for some reason or another. Radio checks should also be conducted with the engine running to ensure that the vibration from the engine is not causing a radio malfunction of some sort.

Flight Training:

The instructor usually has a set idea of how you should approach the learning job. The instructor will ask you to do certain things in the operation of your model throughout your learning experience. If you are not prepared to follow the instructor's suggestions, you will find that the instructor will become quite unenthusiastic about helping you.

One suggested approach for the beginner is to start a flight logbook. In this book you can log the dates, number of flights, condition of the aircraft (minor damage tag) and most importantly, offer the instructor a space to write some comments and certify the level you have achieved as you progress in your training.

Many clubs have several instructors, and you are likely to need the services of more than one. A quick glance at your log will tell the "fill in" instructor exactly what level you are at. Many clubs have these logbooks available.

Your best chance for success is to follow the advice of your instructor. Please bear in mind, however, that the instructor is only assisting you and cannot be responsible for you or your aircraft.

What to Expect:

The stages that you can expect to encounter are:

- a. The pre-flight Checkout of your plane by the instructor must be done before your aircraft is flown for the first time.

b. The radio range check will determine the absolute limit of operation of your radio with the antenna collapsed to one segment. If it has an appreciably shorter range than before, the basic cause should be investigated and corrected.

c. The control test ensures that each control operates in the correct direction. This is equivalent to a final check just before committing your aircraft to the test flight. (*Note: The control test should be done with both the main transmitter and the buddy box.*)

d. The engine test: Here the instructor will ensure that your engine is running satisfactorily. This can be a time-consuming process for many engines, which must be adjusted to run properly. The instructor will satisfy himself that your engine is running reliably so that there is little chance of the engine falling in flight.

e. Taxi and run up tests. This is to ensure that the engine is responding as it should and that the aircraft is properly steerable on the ground.

f. The moment of truth test. Here the instructor will take your aircraft off after a high-speed taxi run and find out just whether your aircraft is airworthy. The instructor will adjust the radio trim levers, which will make minor flight adjustments on the aircraft. He will attempt to achieve straight and level flight. If the trims are adjustable within the range of the throw on the transmitter, the instructor will go on to determine the stall characteristics, sensitivity to control, and in general, whether the aircraft has any obnoxious flight characteristics that may need to be corrected. While this is a bit of a tense moment, most aircraft successfully pass this stage.

g. After the test flight adjustments. This process may go on for several test flights in extreme cases, where the instructor will supervise or make those mechanical adjustments necessary to get everything just right. A word of caution is appropriate here. An aircraft suffers from vibration. Every screw or fastening device must be physically checked after the test flight to make sure that something has not vibrated loose or out of position. This physical check should also be done after the third flight. Most vibration related problems show up very quickly and the first and third flight checks are vital to any long-term health of your aircraft. Thereafter you should make a habit of checking the aircraft just before assembling for a day of flying, otherwise you may not have an aircraft to take home with you.

h. The demonstration of flight characteristics. Here the instructor will show you exactly how the aircraft responds to control from the transmitter. This step is important to both the instructor and the student since it is difficult for the student to control his aircraft if he has no idea how an aircraft operates or just what manoeuvres the instructor wants you to duplicate.

i. Left-hand ovals or turns are the first manoeuvre. These are the simplest to do. You may find that after a few minutes operating the aircraft that it seems more and more difficult to do. This is because your concentration is beginning to decrease. Casual observers are not aware of how intensely a pilot must concentrate to control his aircraft. Nor is the typical student aware that his concentration span is short at first. Five or six minutes. In extreme cases, the ability of the pilot to control his aircraft is measured in seconds, after which he has no effective control of his aircraft. This span of concentration will rapidly increase with successive flights; however, the older flyer should be aware that it might be a few days at the field before he can really say that he has been able to adequately control his aircraft.

j. The right-hand oval. Here the pilot must work against the torque developed by the engine propeller combination. This means that it is slightly more difficult to perform a right-hand circle than a left one.

k. Controlling the aircraft coming and going. The apparent direction of the stick throws changes when the aircraft approaches you. Much scare literature has been written on this problem, but you will find that it is easily overcome. Your Instructor will probably have a few tips to help.

l. A horizontal figure eight. This practices both left and right turns and has the model approaching the student after completion of each half. Some instructors prefer teaching a roll or loop at this point. These manoeuvres help you recognize the various attitudes of your model.

m. Landing approaches. Here you go back to the left- and right-hand ovals with the difference that you are flying directly over the active runway and each time you approach the runway you decrease the throttle a little so that the aircraft descends just a little. With practice, you gradually get closer and closer to the ground but by this time you have good control of the aircraft and getting near to the ground is not a problem.

n. The takeoff. At this point, you are gaining enough control of the aircraft that you can handle a flight where the intention is to simply fly the aircraft in a controlled climb up to altitude. A little problem may be encountered in steering an aircraft at full power, but you will easily become used to this. Most students can handle takeoffs by themselves right after doing their first one.

o. The landing. A continuation of the landing approaches session where the instructor firstly demonstrates how a landing "looks" and after that gets you doing ovals until he can select a particularly good approach that he coaches you to your first landing. See ... easy!

Pilot Test for Wings:

To qualify for a set of pilot's wings and be assessed as being capable of flight without assistance, you must be tested by an instructor. The test consists of a "solo" flight where you demonstrate a successful take-off, left and right-hand oval patterns, a horizontal figure eight, a procedure turn, and finally a landing. The criteria are that you can do these basic manoeuvres under reasonable control and are flying safely as judged by the instructor performing the test. Wings are usually presented to pilots as a formal recognition of having (finally) achieved your flying goal. (*The Kawartha Lakes RC Flyers flight test may be slightly different.*)

What to do About a Crash:

For many beginners this is a difficult situation, particularly since their dreams have been of flying the aircraft, not of seeing their pride and joy as a mangled wreck. Certainly, it is an unhappy situation no matter what. The sight of the crashed model is very often a shock to the beginner with much in common with seeing a member of the family in obvious poor health. This section is devoted to explaining that the end of the world is not at hand. The following items will prepare you for these events:

a. Don't panic. In the fragile world of model aircraft, it is inevitable that one portion of the complex number of things involved will sooner or later fail. This is not to be blasé about the situation but to be realistic about what may happen. The best defense against this curse is to commence building a back up aircraft as soon as you have finished the first. A second aircraft will ensure that you can continue your flight program and will often build much more quickly than your first since you have learned a lot in the process of creating the original. You may wish to consider buying a used, pre-built, or almost ready to fly (ARF) aircraft to continue since these have a good track record and can be procured quickly.

b. Don't attach blame. This will do no good and create additional frustrations for you. These unfortunate events happen to everyone and will happen again to you. Everyone will have done their best to avoid this situation and after the fact post-mortems should only be conducted to ensure that the cause of the crash has been accurately determined...to try to avoid having it happen again.

c. Pick up all the pieces. You may not believe it, but you can repair an aircraft very quickly to flyable shape. CA or "crazy type" glues will reconstruct damage in a way that will surprise you and the aircraft will be

stronger after the repair than before. Less difficult than putting together a jigsaw puzzle -- really! Engines must be carefully cleaned and inspected before being used again and radios must be carefully range checked to ensure that they are functioning correctly. If major damage to either has occurred, you should consider sending them back to the manufacturer who can repair them properly in short order and at reasonable cost. Most importantly, you will have some additional assurance that the job has been done correctly.

d. Do not go into the closet. Your confidence will be shaken, and you will be frustrated and upset. Everyone has crashes and other members can help you to get back into the air. Quietly putting the parts into the garbage can and disappearing into the sunset is likely to see you gone from our ranks forever and this would be most regrettable.

In Case of an Accident:

We hope that this never occurs, but it is useful to know just what to do about it. Members of the club executive or the MAAC Zone Director have claim forms that must be filled in for making a claim against your MAAC insurance. Bring the incident to the attention of the executive, or if you do not fly with a club, to the zone director as soon as possible.

Conclusion:

We sincerely hope that you will find this hobby rewarding and fulfilling. Our instructors are the best around and MAAC is proud of the record of these individuals. Good luck in your flight training, and once again welcome to the fascinating world of radio control.