CLUB HANDBOOK

WOODSTOCK
RADIO CONTROL
FLYING CLUB

CONSTITUTION AND BYLAWS
WOODSTOCK RADIO CONTROL FLYING CLUB
(A CHARTER MEMBER OF M.A.A.C.)
WOODSTOCK, ONT
FOUNDED JANUARY 1, 1972

1) The organization shall be known as "Woodstock Radio Control Flying Club." The fiscal year shall be the calendar year.

2) The main purpose of the organization shall be the advancement and enjoyment of all phases of model aircraft activity to the greatest extent possible through the cooperation of all members to their mutual benefit, and through cooperation with National and International Modelling Organizations.

3) MEMBERSHIP CLASSIFICATION:
There shall be three classifications of membership to be known as:

Regular Membership
All members in good standing, other than Honorary members and Social members shall be deemed to be regular members

Social Membership
Social Membership shall be granted on application as a "non flying membership".

Honorary Membership
Honorary Membership shall be granted upon recommendation of the membership committee and confirmed by majority vote at any special meeting. Honorary members need not pay dues.

(there shall be no other classes of membership, such as Associate, Affiliate, Trade Membership, etc.)

4) THE REQUIREMENTS AND AGREEMENTS OF MEMBERSHIP SHALL BE:

a) Paid members to Models Aeronautics Association of Canada
b) Age eighteen years of over, except at the discretion of the membership committee.
c) Members must be sincerely and actively interested in the model aircraft activity. The only exception allowed will be those engaged in the hobby business or direct contributors of the club
d) Membership on the organization to be by invitation only and subject to the approval of the membership committee
e) A membership may be cancelled at any time because of actions detrimental to the interest of the club. This to be done only after a unanimous decision of the membership committee
f) In all matters pertaining to club business or activity the majority decision rules.

5) NOTICE OF MEETING
Meeting will be held once each month or as determined by club business. All members to be notified by telephone or by notice mailed, so as to arrive three days before each meeting.

6) MEETINGS

Special Meeting:

All matters relating to election of officers, amendments to the constitution, and/or bylaws, shall be determined to have been properly dealt with, upon having been approved by a majority vote at any special meeting, at which not less than fifty-one percent (51%) of the membership and full executive are present or represented by written proxy.

Regular Meeting

General business matters other than amendments to the constitution and/or bylaws, may be dealt with at any regular meeting, and will be deemed to have been properly passed if approval by a majority vote of the members present.

A regular meeting shall be deemed properly constituted if not less than two members of the executive, plus not less than three other members are present.

7) DUES

-members under the age of 18 will pay half the regular membership fee

-The fee for regular membership shall be determined by the executive for the fiscal year of the club, January 1 – December 31: 100 percent payable by January 1

-Dues and initiation fees are not reimbursable.

-renewing members paying at or before the November meeting will pay ****

-renewing members paying after the November meeting will pay the full amount

-New Members joining after September 1st will pay for the following year

-Only fully paid members shall be allowed to use the club facilities after January 1st.

8) Any further money requirements to be collected from each member, on an equal basis, at any time it is deemed necessary.

9) All officers shall be elected by secret ballot and to hold office for two years, with one new executive per year. A motion of non-confidence in any or all members of the executive may be tabled at any special meeting. A seconder is needed.

10) THE OFFICERS OF THE ORGANIZATION SHALL BE

a) PRESIDENT

1) To be elected once every two years by a secret ballot of the members
2) To preside at all meetings, and if unable to attend, to appoint Vice president who shall conduct the meeting according to the wishes of the president.
3) To serve as head of the membership committee.
4) The president shall at all times supervise and direct the activities of the executive and standing committees, and if any irregularities are discovered, shall render a complete report to the club at any regular or special meeting

b) SECRETARY

1) To be elected once every two years by a secret ballot of the members
2) To keep the minutes of all meeting, including meetings of all committees, and, if unable to attend, to appoint a proxy whose duty it will be to keep an accurate record of the meeting, which will be added to the Secretary's minutes.
3) To handle all club correspondence.
4) The secretary shall work closely with the publicity chairman to promote the club image to the public.

c) TREASURER

1) As the secretary, but in the off year of the Presidential Election.
2) To collect, record and administer the expenditure of all club money.
3) To make an up to date financial report at each monthly meeting, to be approved by the meeting and entered in the minutes as approved or as amended.
4) The Treasurer and President jointly and together may make any expenditures not totaling more than fifty dollars ($50.00) must be appropriated by majority vote at a regular or special meeting before the expenditure is made.

d) PUBLICITY CHAIRMAN

The publicity chairman shall handle all contacts with the press, radio and television, and diligently promote club affairs. The publicity chairman shall be appointed by the president.

e) VICE PRESIDENT

1) To be elected every two years, but in the off year of the President Election.
2) To serve on the executive committee, and attend all meetings of that committee.
3) To carry out, in the Presidents absence, all duties of the President in accordance with the Presidents wishes. In the absence of definite instructions from the President, the Vice-President shall, at all times, attempt to conform to the Presidents known wishes.

11) COMMITTEES

a) EXECUTIVE COMMITTEE

To consist of President, immediate Past President, Secretary, Treasurer, Vice-President, Chief Instructor and Bulletin Editor. The function of this committee to be the preparation and presentation of all proposals in order to achieve the saving of as much time as possible at meetings.

b) MEMBERSHIP COMMITTEE

To be composed of the President and any other two flying instructors. The function of this committee to be the investigation, and approval or rejection of all applications for membership.

c) OTHER COMMITTEES

May be set up at any time as required. If necessary, special committee members may be appointed by the President.

d) ALL COMMITTEES AND/OR MEMBERS OF THE EXECUTIVE

Must at any time be prepared to present a report of their activities, giving satisfactory reasons for their actions to the full club membership, at the request of any individual member.

12) BANKING PROCEDURES

Cheques drawn on the club account must be signed by both the Treasurer and the President. Stubs of cheques shall clearly indicate the nature and amount of the expenditures. All deposit slips must be made out in duplicate, and one copy stamped by the bank and retain for audit, and each deposit slip shall clearly indicate source of revenue. All cash transactions shall be recorded, and the recipient shall make out a receipt which clearly sets forth the nature and amount of the item. All committees handling monies shall keep a separate record of account and report to the executive their final statement of receipts, disbursements, and final balance prior to turning the monies and accounts over to the treasurer.

13) BEREAVEMENT

Club policy for club members will be a maximum of $25.00 (charitable donation or flowers) , for family member the secretary will send a sympathy card.

It is hereby noted that this constitution and these bylaws are the minimum necessary to conduct the activities of the organization in a businesslike and efficient manner and to give every member an equal voice in all decisions.

These regulations have been found satisfactory and sufficient. Members of the "Woodstock Radio Control Flying Club" thereby agree to abide by all the bylaws as laid down herein.

This Constitution was prepared by the founding members- G. Ens, T. Paladino, M. Rowe, A. Almond, E. Palmer, as dictated by M.A.A.C. in 1972
First Revision Dated: July 1993
Second Revision Dated : March 2004

Revised April 2007
Removal of Initiation fee

FLYING RULES AND TRAINING PROGRAM

PART "A" - FIELD AND FLYING RULES

The Woodstock Radio Control Flying Club field is rented and maintained for use only by members in good standing with this Club. Our insurance arrangements protecting both the property owners and Club members and guest members. .

1) All transmitters must have the proper frequency flag displayed at all times. M .A.A.C. Membership is mandatory.

2) No transmitter may be turned on for any purpose unless the frequency pin is on the frequency board.

3) Flyers must not wander to the middle of the field while flying. The pilot must remain as close to the pit area as possible, except for picking up a plane on the field.

4) All spectators and cars must be kept off the runways. Pilots must refuse to fly if this rule is not adhered to.

5) There shall be no flying over the pit area or parked cars.

6) Only those members qualified under wings program will be allowed to fly solo at the club field, - See Part "B"

7) There will be no taxiing into the pit. Taxi back to pits to a distance of 20' then plane must be pushed or carried by hand.

8) **Planes must be restrained when starting or running engines**

9) If no instructors are present, any pilot at the field can fly other member's planes, without instructing and for the only purpose of testing the flying characteristics. The owner of the aircraft assumes full responsibility of damages to the model.

PART "B" WING PROGRAM

1) All new members must take part in the student-training program. New member pilots must be checked out by the C.F.I.

2) All students must fly with an instructor present until capable of flying the prescribed pattern. Students should call instructor before leaving for the field.

3) To qualify as a pilot, the club member will be checked out by the chief flying instructor

4) The Pattern is
   - F.A.I.Take Off with first turn away from pit & parking area
   - Straight Flight Out
   - Procedure Turn
   - Straight Flight Back
   - Overshoot
   - Landing Pattern and Left or Right Landing

5) Chief Flying instructor (Referred to as C.F.I.)
The C.F.I. is appointed by the Club Executive.

Duties:

A. Advise and instruct members in the safe and proper methods of flying Radio Control Model Aircraft.

B. Ensure that sufficient staff of instructors are appointed and available to the members in modes of operation. (Members should note that they should make arrangements with instructors re:time and flightline order).

C Check out student pilot when the instructor indicates to him that the student is qualified. After the check flight, the C.F.I. will make an entry on the reverse of the member's M.A.A.C. card stating qualification as a pilot: date and sign the entry; and if possible, award the Pilot Wings at this time.

D. C.F.I. will also be available to train and assist new Pilots who wish to go on to competitive Pattern Flying. He will instruct and advise on the proper ways to fly the current maneuvers, which he has trained at during contest and Pattern Judges School.

E. Promote Wings Program advise executive of club on progress of the program and update if required

SUGGESTED FIELD PRACTISES

1) No testing or running of engines when planes are landing or taking off
2) Pilots are to pronounce their intentions to take off or land.
3) All refuse is to be put in the containers provided
4) Start up and running of engines shall be done with the exhaust facing at right angle to the pit zone

M.A.A.C. Wings Program

With the growing popularity of our sport, it is inevitable that we come under the scrutiny of those who do not understand, and put into embarrassing positions by flyers who are not competent. These flyers do not realize the irreparable harm they do to our image. Therefore, we must work together to have every M.A.A.C. member qualified. The program would ensure that each member was a "Pilot" and this would be recognized by the awarding of "Wings".

"Aims and Objects"

Improve the quality of the flyer. Retain the novice, as he will now have experienced help and reduce his expense due to damaged equipment.

Promotion of safety and retaining our flying fields.

To promote a sense of achievement.

To gain public recognition of our "sport".

A feasibility study has been under way for some time. The findings thus far indicate that the program can be implemented in any club, and the only prerequisite is the desire to succeed. Our surveys indicate that the majority of flyers recognize the need for this program. Your support is needed if your sport and hobby is to continue and flourish.

Introduction

Having read the Aims and Objects of this program, you will no doubt realize the seriousness of the situation in which we find ourselves as a sport. The population explosion has reached us and we must endeavor to protect what we hold dear, from the stigmas and contrary public opinion, which have affected many other sports. The Wings Program is the result of many Clubs and flyers working together with a common purpose. The program may appear too many as regimentation and a dictatorial attitude, which should not be present in a sport. Look around at such sports as golf, motorcar racing, full-scale aircraft flying and what do you see? The beginner in every one of these sports takes instruction from a professional, even though the beginner may have little intention of reaching professional status, before one is allowed to fly a full-scale aircraft

It is mandatory that he take a basic course of instruction and qualify. Have you heard anyone involved in that sport complain about regimentation and dictatorial attitudes? This program is not complete by any means and there will be many areas of misunderstanding and areas, which need to be improved. It is therefore important to us all that "grey" areas be clarified and where clarification is necessary or improvements are recommended please contact your Zone Director without fail.

This is a program of participation, of self-improvement to achieve local, national and international recognition for our sport.

Your Club has embarked on the "Wings Program" to improve and preserve the sport of model aircraft flying. The following format should now be followed:

An executive meeting must be called to establish the following:

Who is to be an Instructor?

Bearing in mind that the Club's best flyer may not be the best teacher:-

The "Instructor" must have complete knowledge of the sport e.g.

(1) The importance of M.A.A.C.

(2) Safety Rules

(3) Equipment installation and basic equipment maintenance

(4) Good flying ability

and the patience and ability to teach the new flyers.

Problem: How does a Club allow for the fact that there may be a representation of transmitter modes one, two and single stick?

Solution: The executive can select an "Instructor" from each mode should the number of new flyers warrant it. It may well happen that the "Instructor" is able to teach all three modes up to the "Pilot" qualifications. There are Clubs that have "Instructors" of this caliber.

Problem: Can the "Instructor" always be available at the field to teach new flyers? Are there too many new flyers for one "instructor"?

Solution: The responsibility lies with the Club executive to appoint the number of qualified "Instructors" equal to the demands of the Club membership. The Club executive is now faced with the most important problem of all

Problem: How does the executive appoint the first Club "Instructor" or "'instructors"?

Solution: The Club executive must consider all of the foregoing items and UNANIMOUSLY agree in their selection of the "Instructor" or Instructors".

The Club Executive will order the 'Instructor" wings from M.A.A.C. headquarters. The Club Instructor is now pledged with the responsibility of protecting and promoting the sport of model flying. This in itself is a great and challenging responsibility.

Duties of an Instructor

The Instructor must always work through the Club executive in the enforcement of rules and regulations necessary to implement the Wings Program. Should the Instructor fail in his duties or take action detrimental to the Club executive, then the executive upon UNANIMOUS agreement of the Club executive can remove the instructor status.

The Instructor, through the Club executive, must enforce the rule that - under no circumstances is a club member or visitor allowed to fly solo until he has qualified for his Pilot Wings. Until the new flyer has qualified, he must have the Instructor by his side at all times.

When a new flyer has qualified for his Pilot Wings, the Instructor will notify the Club executive and the Club membership records will be amended accordingly. The Club will then arrange for Pilot Wings to be obtained from M.A.A.C. Headquarters and presented to the club member. From the time of approval by the Instructor and the Club executive, the members may fly solo.

Problem: There will be too many Clubs members who are qualified pilots prior to the Wings Program being implemented.

Solution: Upon unanimous agreement between the Instructor and the Club executive, the names of the Club members who qualify, at the time of implementation of the Wings Program, should be communicated to the body of the membership and the Club Records amended accordingly. Pilot Wings would be ordered immediately from M.A.A.C.

Problem:' Some members may be unhappy about the fact that they did not obtain their Pilot Wings by way of decision of the Club executive. Solution: The Club executive have CAREFULLY AND SERIOUSLY considered those who qualify without testing. This should be made perfectly clear to the membership. Therefore, the executive must not feel guilty regarding their decision. The executive should indicate to the membership that any member who feels he could quality, should contact the executive for a check out.

Problem: Senior club members become disgruntled when their names do not appear as qualified Pilots.

Solution: The executive must take a mature approach to this problem, and consider the good of the whole Club. This situation has already occurred in many Clubs and has been solved. The senior members sometimes require concentrated instruction in order for them to qualify. If they fail to qualify, it is recommended that they be convinced to remain in the sport and promote their energies in areas beneficial to the welfare of the

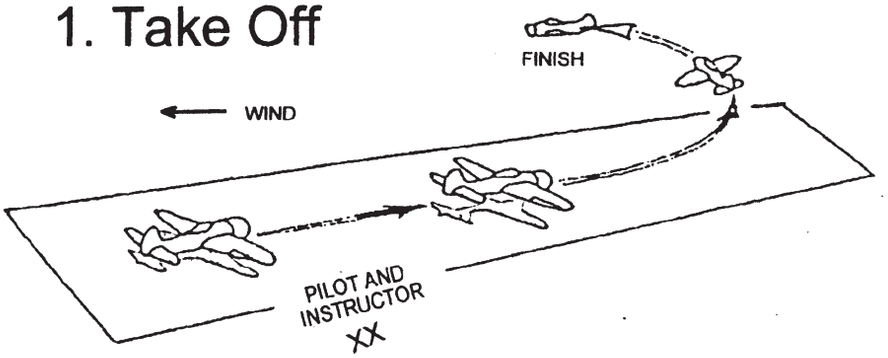
Club,
As a result, the Instructor now has a list of all qualified pilots in his Club. The instructor should have the authority to appoint a qualified Pilot to assist him whenever necessary: This would allow the instructor to have more than one student in the air at one time, as his assistant would be able to stand at the side of another new flyer.
It is mandatory for the Instructor to check the following prior to the initial instruction of a member check-out of a visitor who does not have Pilot Wings from another Club.
(1) Current M.A.A.C. membership card
(2) Current D.O.C. permit
Qualifications for Pilot Wings
In order for a member to qualify as a Pilot he must demonstrate to his Instructor, proficiency to the Instructors satisfaction in the following:
(1) Knowledge of Club Safety Rules (2) Equipment Installation
(3) Engine Starting
(4) Hand Launching
The following must be completed as a flight check-out and done in this sequence.
(a) unassisted ROG
(b) straight flight out
(c) procedure turn (90 degree turn left, 270 degree turn right)
(d) straight flight back
(e) rectangular landing pattern (left and right hand circuits)
(f) landing
General for Instructors
It is obvious that new flyers follow by example, and therefore the example set by the Instructor by his attitude towards the Wings Program, his attitude towards the training of new flyers, will have a far reaching effect in the future of the sport.
The intent here is to lay down guide lines for Instructors and there is no doubt that many Instructors will have tried and proven methods which produce the required results. There are however, many Instructors who will be accepting this challenge for the first time, and it is hoped that these guide lines will assist them. Recommended -
Every flight starts with a pre flight check and a pre flight plan.
Pre Flight Check
- Put pressure on the engine mounts to check for looseness
- Check filters, fuel lines and tank
~ Check wing mounting, control surfaces and hinges
- Remove the wing and check push rods and installation of equipment
- Check servo, receiver and battery installation
- Check all plug connections
- turn equipment on and check all surfaces for movement and alignment
- Range check equipment
- Ensure that a left turn on the transmitter gives you a left turn on the airplane
- Start up the engine and check the
high and low speed engine settings
- Recheck the radio again with the engine running
Pre Flight Plan
No Pilot should take to the air without knowing exactly what he is going to do. To fly with no object in mind wastes time and fuel. As an Instructor. you do not have time to waste your time is valuable. Therefore the new flyer should be .told that he is going to fly a rectangular pattern or he is going to perform procedure turn and the Instructor should ensure that nothing more or nothing less is done during that particular flight. The Instructor will realize that we are building a foundation for discipline and concentration which will prevent many serious accidents,
All new flyers should be taught to fly the aircraft out in front of them. Away from the pit area and at no time should any circuit be over or behind spectators. This of necessity is for safety reasons. Research into flying and teaching methods has shown the following to be important.
(1) Ground School - At the ground
school, engines, hardware, building techniques can be discussed. A most important session at the ground school is the dry run on the transmitter, where the new flyer will learn how to hold the transmitter and the relationship of movement on the stick to the relationship of movement on the control surface.

(2) Flight Training
The new flyer should be trained to fly a rectangular pattern, While this may seem boring, the rectangular pattern contains ail the disciplines necessary to train a Pilot, It has been found mandatory that the instructor and the new flyer execute left and right hand landing circuits. It therefore follows that take offs be followed by left or right hand turns to take the aircraft away from the pit area.
Contained in the rectangular pattern and the straight flight. The 90 degree turn on the four legs of the rectangle. These maneuvers are performed while maintaining a prescribed altitude. As the new flyer becomes more prolific the altitude can be lowered. Do not have the new flyer flying at flying at an altitude that is so high that the aircraft is not clearly visible. The buddy box system is highly recommended but in many areas it will not be available. It is recommended that the instructor have the new flyer hold the transmitter, then the instructor reaches around from behind to place his thumbs on the sticks. The new Flyer places his thumbs over those of the instructor, thus being able to get the feel of the sticks while observing the attitude of the aircraft. Later the new flyer places his thumbs on the sticks with the instructor's thumbs over those of the new flyer. This enables quick and easy corrections by the Instructor faster than trying to reach for possession of the transmitter.
Take offs and landings are executed by the Instructor until such time, that the Instructor feels that the new flyer has gained confidence in flying the rectangular pattern.
It is left to the discretion of the Instructor as to when the new flyer is ready to qualify for his Pilot Wings. Experience has shown that some new flyers would best qualify when they were unaware that the qualifying test was being conducted. Others perform best under more stringent conditions. This decision must be left to the instructor, as he alone is in the best position to know the mental attitude of his new flyer. Where there is more than one Instructor, the qualifying flight must be flown in front of two Instructors.
Problem: A Club member, who is a qualified Pilot, may wish to make an application for an Instructors rating.
Solution: He will have worked for a period of time assisting the Club Instructor. The Instructor will recommend the member's name to the Club executive. A UNANIMOUS Decision must be reached.
Important
It must be realized that the rating of "Pilot" only qualifies the Pilot to fly solo on the aircraft on which he has checked out. When the Pilot advances to another aircraft, e.g. from high wing to low wing, he must be checked out again by .the Instructor. Experience has shown that the new Pilot will automatically expect help when he "graduates" to a more advanced aircraft. However, the Club executive and the Instructor must ensure that the "checkout" on the new aircraft is completed.
Flying rules and Training Program Was Prepared By:
George Ens and Tony Paladino For the Woodstock Radio Control Flying Club in 1974
Revised November 26, 1980
Revised March 2004
Pages ---- from MAAC Magazine

WOODSTOCK
RADIO CONTROL
FLYING CLUB

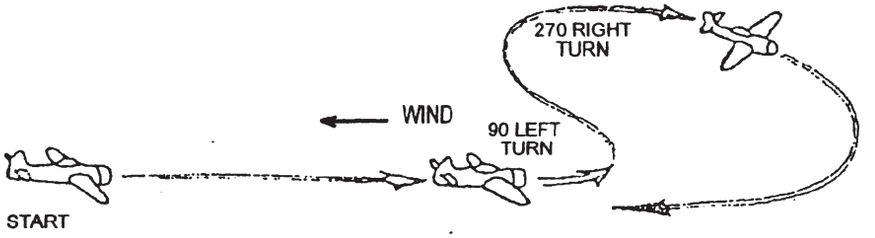
STUDENT TRAINING PATTERN

1. Take Off

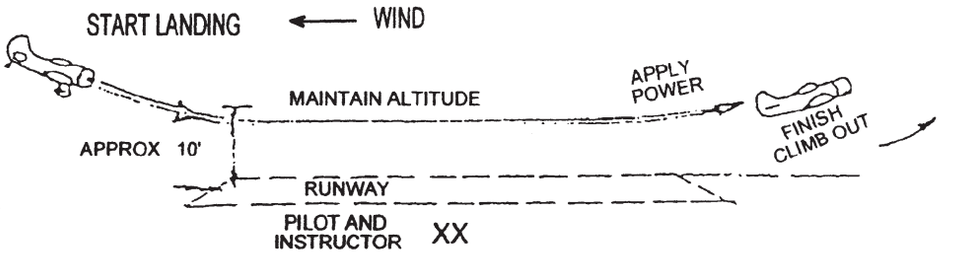


2. Straight Flt. Out

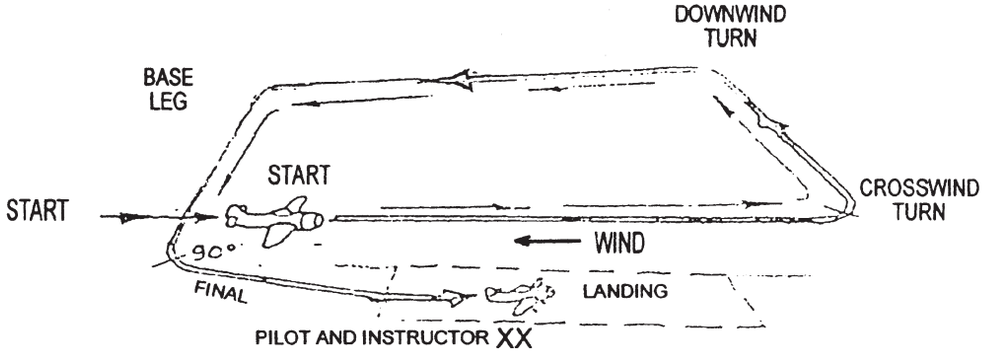
3. Procedure Turn



4. Overshoot



5. Traffic Pattern

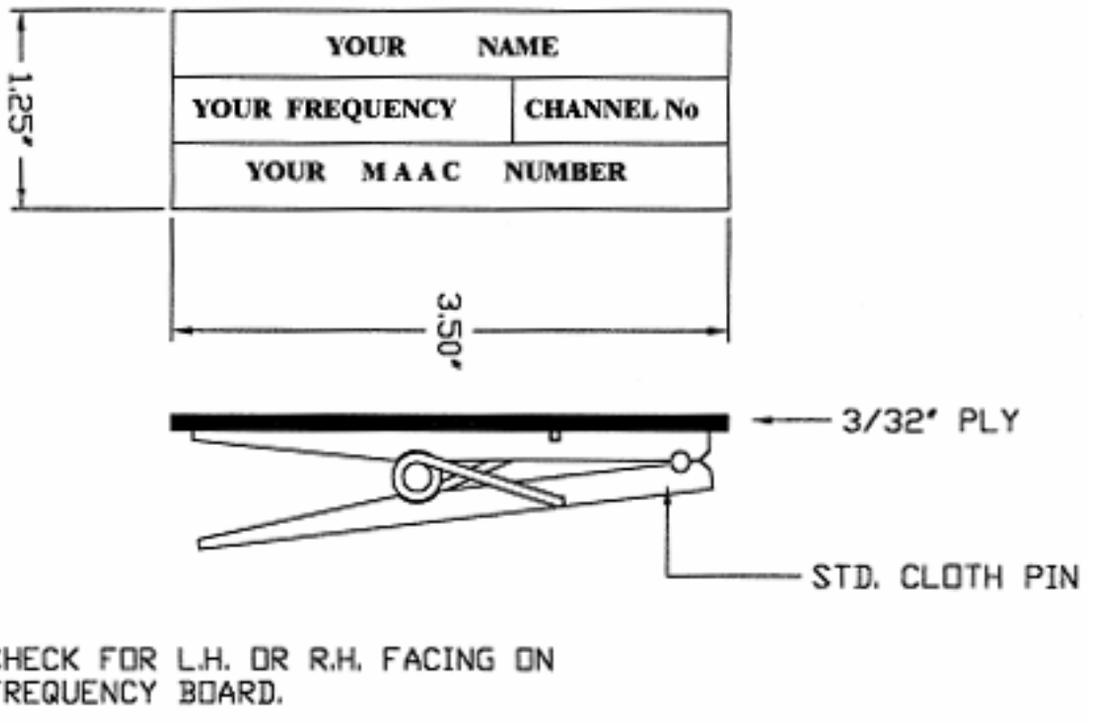


FREQUENCY PIN FOR TRANSMITTERS

Every club member shall have a frequency pin for his transmitter(s), of the size and shape described below. Each pin shall show frequency and channel number, name and MAAC # should also appear on the pin.
You must bring your frequency pin to the field when you bring your transmitter, you should leave the pin clipped to the transmitter antenna when the transmitter is NOT switched on, and you should take the pin home with you when you leave the field.
YOUR TRANSMITTER MUST NOT BE SWITCHED ON FOR ANY PURPOSE UNLESS THE PIN IS CLIPPED ON THE FREQUENCY BOARD.
YOUR FREQUENCY PIN MUST NOT PLACED ON THE BOARD IF ANOTHER PIN OF THE SAME FREQUENCY IS ALREADY THERE. .

The frequency pin should be made in accordance with the diagram below. Use a standard clothes pin and attach it to a piece of 1/16 plywood. Paint it white or cover with white iron-on covering. With the MAAC Standard Board your. frequency pin will cover your frequency. The standardization will help avoid confusion. Fliers using FM or PCM equipment may use the narrow pin which is used by clubs with five fliers airborne at one time. The use of this size provides for one channel space between active frequencies. The Old Canadian Frequencies 72.720 72.760 72.800 72.840 are illegal
Before making up a pin check and note which side of the board the pin will be used. See Frequency Board

Frequency Pin



CHECK FOR L.H. OR R.H. FACING ON FREQUENCY BOARD.

Frequency Board

Chan	Freq
11	72.010
12	72.010
13	72.050
14	72.070
15	72.090
16	72.110
17	72.130
18	72.150
19	72.170
20	72.190
21	72.210
22	72.230
23	72.250
24	72.270
25	72.290
26	72.310
27	72.330
28	72.350
29	72.370
30	72.390
31	72.410
32	72.430
33	72.450
34	72.470
35	72.490

All frequencies listed
on this board are authorized
by the Department of
Communications for use
within Canada. No license
is required for use of these
frequencies for model control.

AIRCRAFT USE ONLY

Freq	Chan
72.510	36
72.530	37
72.550	38
72.570	39
72.590	40
72.610	41
72.630	42
72.650	43
72.670	44
72.690	45
72.710	46
72.730	47
72.750	48
72.770	49
72.790	50
72.810	51
72.830	52
72.850	53
72.870	54
72.890	55
72.910	56
72.930	57
72.950	58
72.970	59
72.990	60

AFTER RUN – ENGINE LUBE and BASIC TRAINER DIAGRAM

Prevents gumming
Prevents rust
Longer engine life
Easier starts

AFTER 4 DAYS FLYING

Use one or two drops into Venturi intake, turn engine over a few times to distribute oil.

FOR ENGINE STORAGE:
Use two or three drops into Venturi intake, also same amount for top of motor. With Glow Plug removed turn engine over a few times to distribute oil.

FOR MOTOR CARBON CLEANOUT

Use two or three drops into Venturi with motor running throttle. Let engine R.P.M. build up between doses. One or two does twice a season is usually sufficient.

WARNING

Do not over lube engines as it makes for difficult starting.

WOODSTOCK
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RC Flying Network Forums - Carburetor Adjusting 101

Here's a scenario: Pilot takes off, plane's engine sounds great. After several minutes of flying, engine seems to lose power, sounds kinda "thin", pilot keeps flying. Engine continues to sag, now full throttle is very weak, pilot now understands that maybe this isn't gonna clear up. Engine dies (what a shock!), pilot calls for dead stick landing overshoots, tears off landing gear, etc. Never seen this at your field, right?

Here's the way that *I* set mixture on non-airbleed carbed engines (90% of the engines out there fit this category, but the theory is similar for air-bleed carbs). First of all, understand that the high speed needle has its main effect from 3/4 to full throttle, and the low speed needle controls everything from idle up to 3/4 throttle. It thus makes sense to me to spend the biggest majority of my tuning time adjusting the needle that controls the largest portion of engine running, right? Also, remember that there is a proper air to fuel ratio (mixture) that allows the engine to run properly. Too much fuel is rich, and too little fuel is lean. We "richen" the mixture by adding more fuel (turning the needle out, or counter-clockwise), and we "lean the mixture out" by decreasing the fuel (turning the needle valve in, or clockwise).

I start the engine give it full throttle, and lean it to it's highest rpm (peak), then richen it by maybe a quarter turn. Then with the glow plug igniter still attached, I slowly close the throttle to an idle rpm. At the lowest rpm that the engine will still reliably run, I then remove the glow igniter. If the engine dies immediately, I know it's too rich, and I then lean out the LOW SPEED NEEDLE by l/8th of a turn (don't touch the high speed needle). Start the engine again, (and this is important) give FULL throttle briefly to clear out excess fuel, then slowly close the throttle again. Remove the glow igniter, and this time it may run a little longer before it dies, so lean the low speed another l/8th turn. Re-fire the engine, give a burst of full throttle to clear it out, and slowly close the throttle again. Remove the glow igniter and now notice that the rpm DROPPED a bit when you removed the glow igniter, but the engine kept running. We're getting there. It's still too rich, and you'll prove that by opening up the throttle and hearing the engine "blubber" then die. That's because excess fuel has collected in the crankcase during the rich idle, and when you opened up the throttle, the excess was pulled into the cylinder, making it WAY too rich. Supposed you were on a landing approach, and decided to go around, you throttle up but the engine "blubbers" and then dies (another thing we haven't seen, right?). Yep, the LOW SPEED needle was still too rich, allowing excess fuel to collect in the crankcase, just WAITING on you to try to go around so it could "LOAD UP", blubber, and die!

Keep leaning the low speed needle down until it idles well, but now, when you open up the throttle, it HESITATES instead of BLUBBERS. When this happens, you've lean it down too far, so richen it up a 16th of a turn and try again. You know you've got the LOW SPEED needle right when you can fire it up, remove the glow igniter, and the rpm doesn't change AT ALL, and you can open the throttle up, and it doesn't blubber or hesitate, it just runs!

The final thing you do is re-adjust the HIGH SPEED NEEDLE, leaning it to it's highest rpm (peak) and then richening it up maybe l/8th turn to give it a slightly rich mixture. We also know that the fuel mixture will change in flight when you point the nose up (harder for fuel to travel uphill) and also as the fuel level in the tank changes. In both cases, a leaner mixture results, so we actually need to set the mixture a bit further on the rich side to account for this. While the engine is running at full throttle, CAREFULLY pick the model up and raise the nose to at least a 45-degree angle while listening to the engine. If the engine sags a bit, then you'll need to richen up the high speed needle l/16th turn. Try it again, and when you can point the nose up and the engine doesn't sag, but maybe shows a slight GAIN in rpm, you know you've got it right.

Now the engine will be happy, and chances are will reward you with reliable running. If you've got one of the few engines with an air bleed adjustment for low speed adjustment, the theory is the same, just refer to your manual to see how to richen and lean the low speed mixture.

Gotta go rest my typing fingers!

http://www.rcflying.net/forums/showthread.php? s=&threadid=4 54

WOODSTOCK
RADIO CONTROL
FLYING CLUB

Setting the Idle Mixture

Once the high-speed (full throttle) mixture has been set it's time to set the idle. Do the following with the battery disconnected from the glow plug. Slowly close the throttle until the engine is close to stopping. It may actually stop if you go too far but you will then have some idea of just how slowly it will run reliably. When it is at its slowest consistent idle, pinch the fuel tubing between your fingers. If the mixture is set correctly, the engine will pick up a few revs after about a second before suddenly dropping in revs. Let the tubing go as soon as the revs start to drop and the engine should keep running at its normal idle speed.

If the revs drop immediately, the tubing is squeezed then it is too lean, conversely, if the engine revs increase quite a bit over several seconds then it is too rich.

So, how is the mixture altered? There are two different types of adjustments commonly used. One (which I will deal with first) is called an air bleed and can be recognized by a small hole in the front of the carby near the top. On the side is a small screw fitted with a spring that screws into the hole. If you look carefully into the hole, you should see that it is partly blocked by the end of the screw. The hole allows air to leak in to the carby so leaning out the mixture. The screw regulates the size of the hole so changing the amount of air that can leak through. Winding the screw out opens the hole to let more air through and leans out the mixture. Winding in of course does the opposite.

So, if you have determined that your engine is too rich at idle, wind the screw out a little at a time. Be very careful of the prop as the screw is extremely close to it. I prefer to stop the engine before making an adjustment, particularly as you usually have to use a small screwdriver. If this gets caught by the prop, it can be quite dangerous. Before checking the new setting, run the engine at about half throttle for a few seconds. This will clear any raw fuel out of the crankcase. Then come back to idle and squeeze the fuel tubing again. Continue the adjustments until you have only a small increase in revs as mentioned earlier. Now run the engine at full throttle to make sure it still has the correct setting and then check your idle mixture once again. If all is well then you are ready to fly.

Now for the second type of idle adjustment. This is known as a fuel metering carby and can be recognized by the fact that there is no hole in the front but there is a second, usually much smaller, needle valve on the opposite side to the main needle. Sometimes this second needle is actually hidden down inside the throttle barrel. Also another big difference between the two types of carby is that the throttle barrel on this type moves in and out as the barrel goes from open to closed. But the mixture on these is adjusted in the opposite way to the air bleed type in that screwing the needle out will richen it. This is because we are now varying the amount of fuel going into the engine instead of air.

Check the idle mixture in the same manner as described for the air bleed carby (by pinching the fuel tubing) and determine whether it is rich or lean. If rich, screw in a little and vice versa. Once again, be careful of the prop. Chances are that you will find that as you alter the mixture, the idle speed will increase. If it does then adjust the idle speed (remember, this is not the same as idle mixture) back to a slower speed. When you are happy that it is correct, go fly and have fun.

An indication of a well-tuned engine is to suddenly open the throttle from idle and have it run up quickly to full revs without any hesitations. If it is a little rich it will hesitate for a moment before accelerating whilst if it is a little lean it is liable to cut. Before each flight, carry out this check. Another check you should do is to run at full throttle and raise the nose of the plane to at least 45 degrees. You will probably notice a small increase in revs. This is because the engine is now having to suck the fuel up from the tank, which is now down below the engine, and leaning out the mixture. A very good reason for not tuning for peak revs. If you had tuned for maximum revs then lifting the nose like this could cause the engine to stop.

On either type of carby it is not necessary to set the engine at the slowest possible idle. If you do then you run the risk of the engine suddenly stopping, usually when you least want it to. The slowest idle you normally need is when the plane will not try to move when you let it go. This will normally be quite slow enough to allow the plane to land at its proper landing speed and to fly slowly enough that it will stall. Too high an idle will give you a plane that lands too fast and takes a long time to stop once it's back on the ground.
http://www.holdfastmac.com.au/howidiemix.htmi

WOODSTOCK
RADIO CONTROL
FLYING CLUB

FLIGHT TRIMMING

A model is not a static object, unlike a car, which only hunt left or right on the road (technically, a car does yaw in corners, and pitches when the brakes are applied), a plane moves through that fluid we call air in all directions simultaneously. The plane may look like It's going forward, but it could also be yawing slightly, slipping a little and simultaneously climbing or diving a bit. The controls interact. Yaw can be a rudder problem, a lateral balance problem or an aileron-rigging problem. We must make, many flights, with minor changes between each, to isolate and finally correct the problem.

The chart accompanying this article is intended to serve, as a handy field reference when trimming your model laminate it in plastic and keep it in your flight box, You just might have need to consult it at the next contest! The chart is somewhat self-explanatory, but we will briefly run through the salient points.

First, we are assuming that the model has been C.G. balanced according to the manufacturer's directions. There's nothing sacred about that spot - frankly, it reflects the balance point where a prototype model handled the way the guy who designed it thought it should, lf your model's wing has a degree more or less of incidence, then the whole balance formula is incorrect for you. But, it's a good ballpark place to start.

The second assumption is that the model has been balanced laterally; Wrap a strong string or monofilament around the prop shaft behind the spinner, then tie the other end to the tail wheel or to a screw driven to the bottom of the aft fuse. Make the string into a bridle harness and suspend the entire model inverted (yes, with the wing on!), If the right wing always drops sink some screws or lead into the left wing tip., etc. You may be surprised to find out how much lead is needed.

At this point, the model is statically trimmed. It's only a starting point, so don't be surprised if you wind up changing it all. One other critical feature is that the ailerons must have their hinge gap sealed. If shoving some Scotch tape or Monokote into the hinge gap to prevent the air from slipping from the top of the wing to the bottom, and vice-versa, bothers you, then don't do it.

To achieve the maximum lateral trim on the model the hinge gap on the ailerons should be sealed. The easiest way to do this is to disconnect the aileron linkages and fold the ailerons as far over the top of the wing as possible (assuming they are top or center hinged). Apply a strip of clear tape along the joint line. When the aileron is returned to neutral, the tape will be invisible, and the gap will be effectively sealed. Depending on how big the ailerons are, and how large a gaping gap you normally leave when you install hinges, you could experience a 20 percent increase in aileron control response just by this simple measure.

Your first flights should be to ascertain control centering and control feel. Does the elevator always come back to neutral after an 180.degree turn or Split S?

Do the ailerons tend to hunt a little after a rolling maneuver? Put the plane through its paces. Control centering is either a mechanical thing (binding servos, stiff-linkages, etc,), an electric thing (bad servo resolution or dead-band width radio system) or C.G. (aft Center of Gravity will make the plane wander a bit). The last possibility will be obvious, but don't continue testing until you have isolated the problem and corrected it.

Let's get down to the task of trimming the model, Use a tachometer every time you start the engine, to insure consistent results. These trim flights must be done in calm weather. Any wind will only make the model weathervane. Each "maneuver" on the list assumes that you will enter it dead straight and level. The wings must be perfectly flat, or else the maneuver will not be correct and you'll get a wrong interpretation, That's where your observer comes instruct him to be especially watchful of the wings as you enter the maneuvers.

Do all the maneuvers al full throttle. The only deviation from this is if the plane will be routinely flown through maneuvers at a different power settings.

Let's commence with the "engine thrust angle" on the chart, note that the observations you make can also be caused by the C.G., so be prepared to change both to see which gives the desired result, Set up straight, and level pass the model should be almost hands off. Without touching any other control on the transmitter, suddenly chop the throttle. Did the nose drop? When you added power again did the nose pitch up a bit? If so, you need some down thrust or nose weight.

When the thrust is correct, the model should continue along the same flightpath for at least a dozen plane lengths before gravity starts to naturally bring it down. Do each maneuver several times, to make sure that you are getting a proper diagnosis. Often, a gust, an accidental nudge on the controls, or just a poor maneuver entry can misled you. The thrust adjustments are a real pain to make. On most models, it means taking the engine out, adding shims, then reassembling the whole thing. Don't take shortcuts. Don't try to proceed with the other trim adjustments until you have the thrust line and/or C.G. correct. They are the basis upon which all other trim settings are made.

Also, while you have landed, take the time to crank the clevises until the transmitter trims are at neutral. Don't leave the airplane so that the transmitter has oddball combination of trim settings. One bump of the transmitter and you have lost everything. The trim must be repeatable, and the only sure way to do this is to always start with the transmitter control trims at the middle.

The next maneuver is somewhat more tricky than it looks, To verify the C.G. we roll the model up to a 45 degree bank, then take our hands off the controls. The model should go a reasonable distance with the fuse at an even keel. If the nose pitches down remove some nose weight, and the opposite if the nose pitches up. The trick is to use only the ailerons to get the model up at a 45.degree bank. We almost automatically start feeding in elevator but that is a no-no. Do the bank in both directions, just to make sure that you are getting an accurate reading of the longitudinal balance.

We now want to test the correct alignment of both sides of the elevator (even if they are not spit, like a Pattern ships they can still be warped or twisted). Yaw and lateral balance will also come into play here, so be patient and eliminate the variables one by one. The maneuver is a simple loop, but it must be entered with the wings perfectly level. Position the maneuver so that your assistant can observe it end on. Always loop into the wind. So several loops, and see if the same symptom persists, Note if the model loses heading on the front or back side of he loop. If you lose it on the way up, it's probably an aileron problem, while a loss heading on the way back sown id most likely a rudder situation.

After you get the inside loops going correctly, do the same maneuver to the outside, entering from an inverted position. Before you make too many dramatic changes, glance at the remainder of the chart and note the myriad combination of things we can do just with just the ailerons. Each change you make will affect other variables.

Note that the Yaw test is the same looping sequences. Here, however, we are altering rudder and ailerons, instead of the elevator halves. We must repeat that many airplanes just will not achieve adequate lateral trim with sealing the aileron gaps shut. The larger you make the loops (to a point), the more discernible the errors will be.

The Lateral Balance test has us pulling those loops very tightly. Actually, we prefer the Hammerhead as a better test for a heavy wing. Pull straight up into a vertical and watch which wing drops. A true vertical is hard is hard to do, so make sure that your assistant is observing from another vantage point. Note that the engine torque will affect the vertical the vertical fall off, as with rudder errors. Even though we balance the wing statically before leaving for the field, we are now trimming it dynamically. The Aileron Coupling (or rigging) is also tested by doing hammerhead. This time, however, we want to observe the side view of the model. Does the plane want to tuck under a bit? If so then try trimming the ailerons down a small bit so they act as flaps. If the model tends to want to go over into a loop then rig both ailerons up a few turns on the clevises. Note that drooping the ailerons will tend to cancel any washout you have in the wing. On some models, the lack of washout can lead to some nasty characteristics at low speeds.

The effects noted with the Aileron Coupling tests can also be an improperly set wing incidence. The better test for this is knife-edge flight…if the model tends to pull upwards i.e. it swings towards a nose up direction, and then reduce the wing incidence. If the model tries to go off heading toward, the bottom side of the plane then Increase incidence.

Again, we reiterate that all of these controls are interactive. When you change the wing incidence, it will influence the way the elevator trims at a given C.G.

Reshimming the wing will also change the rigging of the ailerons, in effect, and they may have to be readjusted accordingly.

The whole process is not hard. As a matter of fact, it's rather, fun - but very time consuming. It's amazing what you will learn about why a plane flies the way it does and you will be a better pilot for it. One thing we almost guarantee is that your planes will be more reliable and predictable when they are properly trimmed out.

They will fly more efficiently, and be less prone to doing radical and surprising things. Your contest scores should improve, too.

We wish to acknowledge 'the Orlando. Florida Club Newsletter, from which the basics of the chart presented here were gleaned

Reprinted in part by Great Planes Model Manufacturing Company courtesy of Scale R/c Modeler magazine Pat Potega Editor 1983 issue

TRIM FEATURE	MANEUVERS	OBSERVATIONS	CORRECTIONS
CONTROL CENTERING	Fly general circles and random maneuvers	Try for hands off straight and level flight.	Readjust linkages so that TX trims are centred
CONTROL THROWS	Random maneuvers	A. too sensitive, jerky controls B. not sufficient control	If A, change linkages to reduce throws If B, increase throws
ENGINE THRUST ANGLE[1]	From straight flight chop throttle quickly	A. aircraft continues level path for short distance B. plane pitches nose up. C. plane pitches nose down	If A, trim is OK If B, decrease down thrust If C, increase down thrust
C OF G LONGITUDINAL BALANCE	From level flight roll to 45 bank and neutralize controls	A. continues in bank for moderate distance B. nose pitches up C. nose drops	If A, trim is good If B, add nose weight If C, remove nose weight
SPLIT ELEVATORS (ALSO YAW ANS C OF G)	Into wind, pull open loops, using only elevator. Repeat tests doing outside loops to inverted entry	A. wings are level throughout B. plane tend toward outside when right side up, and to inside when inverted C. plane goes in on regular loops and out on inverted. D. plane goes out on both types of loops E. plane goes in on both types of loops	If A, trim is fine If B, add weight to right wing, or add right rudder If C, add weight to left wing, or add left rudder If D, raise right half of elevator(or lower left) If E, raise left half of elevator (or lower right.)
YAW[2]	Into wind, do open loops, using only elevator. Repeat tests doing outside loops to inverted entry	A. wings are level throughout B. yaws to right in both inside and outside loops C. yaws to left in both inside and outside loops D. yaws right on insides, and left on outside loops E. yaws left on insides, and right on outside loops	If A, trim is correct If B, add left rudder trim If C, add right rudder trim If D, add left aileron trim If E, add right aileron trim
LATERAL BALANCE	Into wind do tight inside loops, or make straight up climbs into hammerheads Do the same from inverted entry	A. wings are level and plane falls to either side randomly in hammerhead B. falls off to left in both inside and outside loops. Worsens as loops tighten C. falls off to right in both loops. Worsens as loops tighten D. falls off in opposite directions on inside and outside loops	If A, trim is correct If B, add weight to right wing tip If C, add weight to left wing tip If D, change aileron trim[3]
AILERON RIGGING	With wings level, pull to vertical climb and neutralize controls.	A. climb continues along same path B. nose tends to go to inside loop C. nose tends to go to outside loop	If A, trim is correct If B, raise both ailerons very slightly If C, lower both ailerons very slightly
WING INCIDENCE	Knife edge flight	A. model tends to veer in nose up direction C. model veers in nose down direction	If A, reduce wing incidence If B, increase wing incidence

1. engine thrust angle and C.G. interact. Check both

2. Yaw and lateral balance produce similar symptoms. Note that fin may be crooked. Right and left references are from the planes vantage point

3. ailerons cannot always be trimmed without sealing the hinge gap

BASIC ACROBATICS

FOR TRAINERS

By Maj. Ed Moorman

(from RC Modeler Jan 1979)

When I first started flying R/C, I couldn't wait to start doing acrobatics. All that flying straight and level was for the birds; I wanted to loop and roll. Now that I am instructing R/C, I find that most of my students like to learn a little acro as soon as they can, even before they can land, so I show them a few basic maneuvers that they can do with their trainers. All these maneuvers loop, roll, Split-S, Immelman, Cuban-8 and spin, are ones that virtually any trainer can do, whether it is an aileron trainer or just a 3-channel one. Let me list a few trainers that I have performed basic acrobatics with: Falcon 56; Sig Kadet; Sr. Falcon; Klipper; Super Sport; RCM Trainer; Ugly Stick; Middle Stick; Sweet Stick; Little Stick; Lanier Comet; Fledgling; A-Ray; Esquire and Headmaster. There are certainly other trainers that will perform acrobatics, but as you can see, this list covers the full range of aileron and rudder planes.

If you have that urge to try some acro like I did, don't wait until you graduate to a pattern ship, read on and I'll explain how these maneuvers are done with trainer type planes.

Before you take-off and start into acro, it is a good idea to give your plane a quick once over. Flying acrobatics will put more stress than normal on your plane, so give the wing and tail a check to see if they have any cracks. Most planes call for fiberglass and epoxy reinforcement on the wing's center section. If your plane doesn't have this or at least all of the reinforcement called for on the plans, then don't attempt acrobatics as you may break the wing. It's better to be safe than sorry. You also need to give your engine a check to make sure it will hold full power, especially if the engine size is down near the lower displacement recommended for your plane. Let's face it, a ,19 will have a much harder time pulling a trainer designed for the .19 to ,40 range than a ,35 or a .40 will. The .19 will still take you through the maneuvers, but you'll probably have to get a "running start" by diving for some speed first, Now that your plane checks, let's get to the acro.

Your first and easiest acrobatic maneuver is the loop. It, along with the roll, is what you might call a base maneuver, since many acrobatic maneuvers are made up of loop and roll combinations, as you will see later Enter the loop at full power, with your wings level, at an altitude you feel comfortable flying at, and on a course parallel to the runway. By the way, you'll use this set-up, full power, wings level, comfortable altitude, and parallel course, for all your maneuvers, so keep it in mind when you read about and try the others: To do a loop the easiest way, smoothly pull the elevator stick to full up and hold it there until the plane makes a full loop back around to level flight, then release it. This should be a fairly tight loop and probably not too round. As you practice and become more confident, you can use less than full up and "play" the control to make the loop round. You'll have to ease off some up control as the plane approaches the inverted position, then add the up control progressively back in as you go down the back side of the loop. See Figure 1.

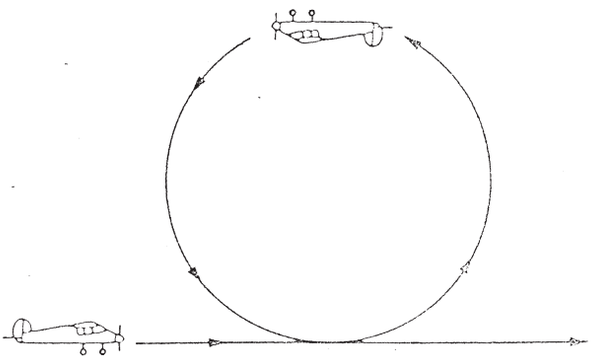


FIGURE 1. LOOP

if your loop is very big at full up, or the plane doesn't make it over the top, you may need greater elevator movement or more speed. Move the clevis one hole closer in on the horn and try it there. You may also need to dive the plane slightly to increase the speed for the maneuver. Don't overdue it, however.

Your next maneuver is a roll. Remember to set up for the roll as you did for the loop: full power, wings level comfortable altitude, and parallel course. You should learn the roll as a three part maneuver, with three distinct stick movements. Take a look at Figure 2.

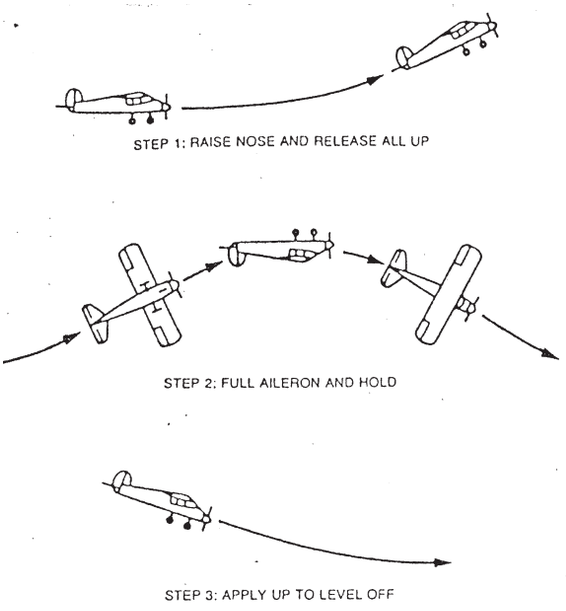


FIGURE 2. ROLL

In step 1 you raise the nose about 20 degrees and release all the up elevator. For step 2 you put in full aileron stick and hold it until the roll is completed and the wings are back level, then release the aileron. Finally step 3 is to add some up, to level the plane off. Notice that Figure 2 shows the plane flying through an arc as it performs the roll. This is because a trainer not being designed for inverted flight, tends to nose downward when inverted. As a matter of fact, all planes do to some extent, and pattern fliers, to keep their planes level while rolling, add a slight amount of down elevator as their planes reach. the inverted position. If you had started your roll from level flight, at the finish your plane's nose would be excessively low. That's the reason for starting the roll nose high.

A couple of errors you can run into are holding up during the maneuver and not holding enough aileron.. If you don't release all the up before you roll your plane will end up in a screaming dive because when you get inverted the up elevator will pull the nose down. Be sure you do the maneuver as a 3-step one: (1) up, release; (2) roll, release; (3) up to level off. The second error you can make is not holding enough aileron or rudder during the roll. You will probably put it in and then let it ease out and tend to stop near inverted. If you do this and get confused, pull in full up until you get back to level flight, then set up and try again.

Your third maneuver is the Split-S. The Split-S is a turn around maneuver. It reverses your direction while keeping the plane's flight path the same distance from you. You'll see many pattern fliers using a Split-S to turn around in-between their maneuvers. Like the roll, the Split-S is a 3-step maneuver. Look at Figure 3 as you go through the maneuver.

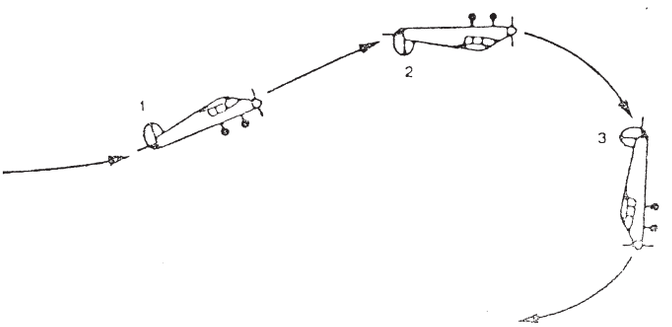


Figure 3. Split S

(1) Pull in up to raise the nose approximately 20 degrees, and release all the up control. (2) Put in full aileron to roll inverted and release: (3) Pull in full up to bring the plane through a half loop to upright level flight. If you make a mistake and don't get exactly inverted, you'll get a crooked Split-S, but by holding up you'll still come back to upright flight. As you gain confidence with the maneuver, you can use less then full up in step 3 to level off at the altitude you want.

You probably noticed that the Split-S is a combination of a loop and a roll, or more precisely, a half roll followed by a half loop. As I said earlier, many acrobatic maneuvers are combinations of loops and rolls. All you have to do is put them in the right order. Now notice that the next two maneuvers are also loop and roll combinations.

The fourth maneuver, which is the reverse of a Split-S, is the Immelman. It is also a turn around maneuver. The Immelman differs from the Split-S in that it puts you at a higher altitude at the end of the maneuver. It is a 2-step maneuver, as shown in Figure 4.

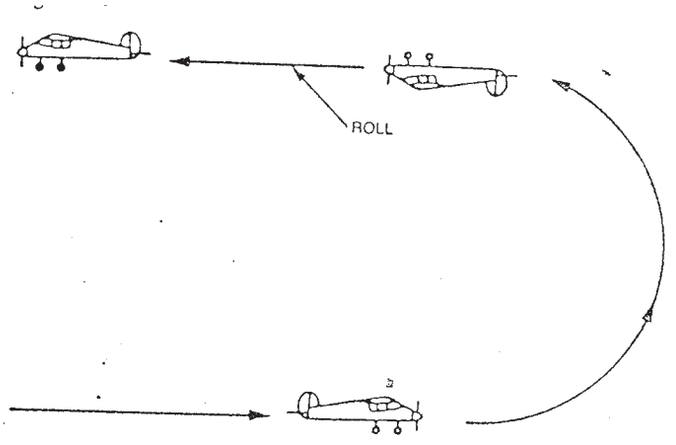


FIGURE 4. IMMELMAN

In step 1 you pull in up control like you are doing a loop. At the top of the loop, when you are inverted, release all the up. Step 2 is to put in full aileron to roll right side up. You will find that the roll is usually very slow and sloppy. This is caused by the plane being very slow, having lost most of its speed in the half loop. A higher powered plane that maintains its speed better as it goes through the pull up will do a nicer looking Immelman. if you want to finish the Immelman in level flight then you should not do a complete half loop, but release the up elevator slightly early, with the nose 10 to 15 degrees high.

See Figure 5.

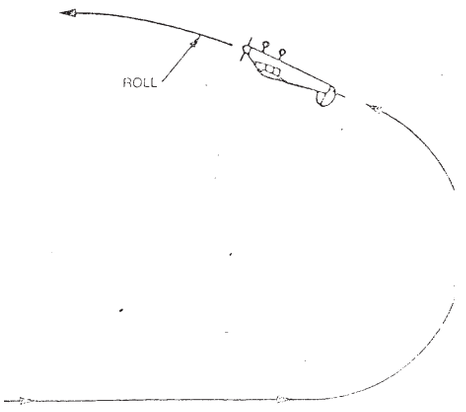


Figure 5. Immelman

If you got your nose too far down before you rolled in tile Immelman, you probably did half of a Cuban 8 without realizing it. Study Figure 6 and notice how half of the Cuban 8s just about like an Immelman

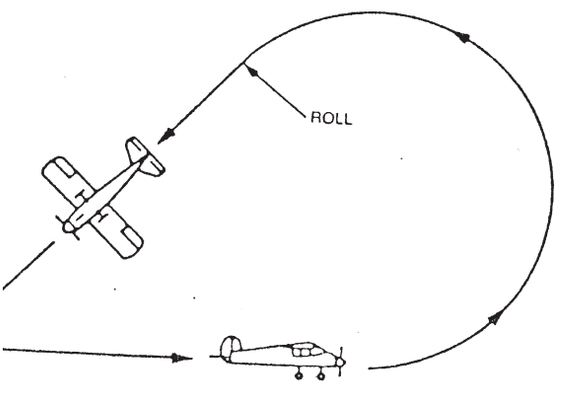


FIGURE 6. HALF OF CUBAN 8

Like the Immelman half of the Cuban 8 is a 2-step maneuver. Step 1 is to pull in up control to start a loop. Just after you pass inverted with your nose about 20 degrees down, release all the up. Step 2: Use full aileron to roll back to upright flight. Your nose will now be about 45 degrees down. Pull up again as though you are starling a loop, and do the whole sequence again for a full Cuban 8. The full Cuban 8 is shown in Figure 7. Follow the numbers through the complete maneuver.

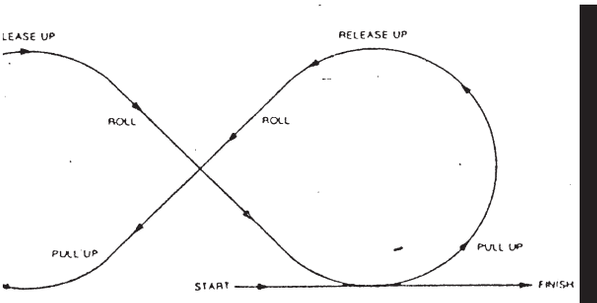


FIGURE 7. CUBAN 8

I think the Cuban 8 is a more impressive maneuver than the Immelman. The rolls look nicer since they are done at a higher speed, and you also describe a path in the sky that looks like something - an 8 laying on its side.

I am going to describe one more maneuver that some of the trainers will be able to perform: the spin. Many trainers are too nose heavy or don't have enough elevator travel to spin. Give this one-a try, if you like, but be careful about changing the controls or C.G. if your plane won't spin. You may make it too

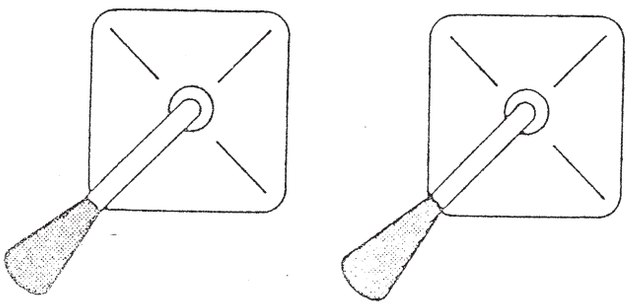


FIGURE 8. LEFT SPIN CONTROLS

sensitive for your normal flying if you change things too radically.

To enter the spin, climb up to a reasonably high altitude and throttle back. Keep adding up elevator to hold altitude as the plane slows. When the plane stalls and the nose drops, or you get to full up put both sticks to the corners and hold them there. That means for a left spin you should be holding full up elevator, full left aileron, full left rudder, and idle power. See the sketch in Figure 8.

For a right spin you, of course reverse the aileron and rudder. If you are using a single stick radio, you move the controls in the same manner. See Figure 9.

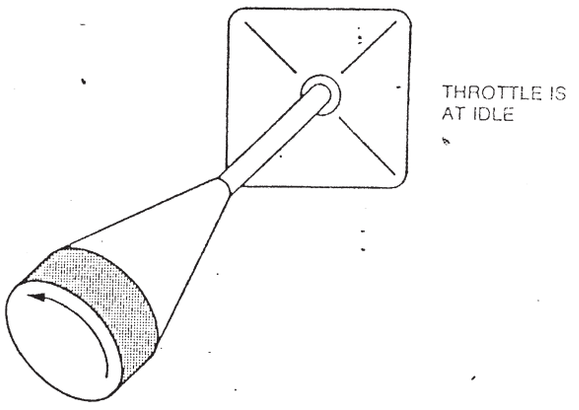


FIGURE 9. SINGLE STICK LEFT SPIN

When your plane starts down, watch it closely to see if you are in a spin or a spiral. In a spin the plane should be rotating rapidly and dropping down a nearly straight line. See Figure 1Oa.

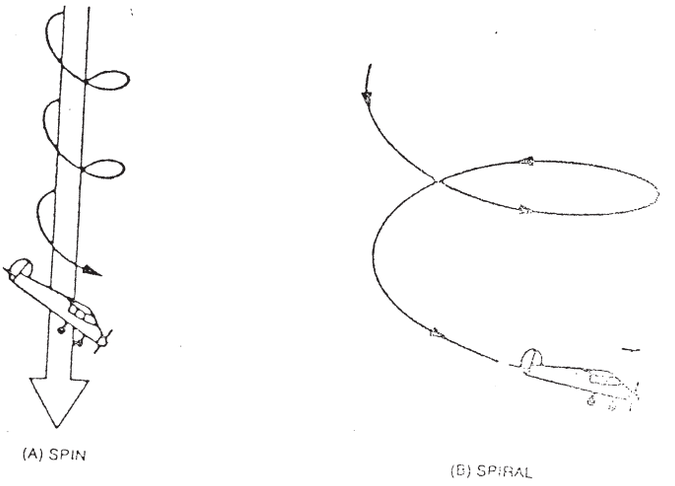


FIGURE 10.

In a spiral, the plane flies around slowly in a descending circle. See Figure 10b. If you have any question as to whether it is a spin or a spiral, ask an experienced flier at your field to watch your plane and tell you which one it is.

To recover from a spin, you just release the controls. The plane will stop spinning and the nose will drop, ending up in a vertical dive. Use up control to level off and add some power to return to cruise speed.

That covers the basic acrobatics that you can do with a trainer. Try these until you can do them, then practice every chance you get. When you move up from your trainer to a faster, more responsive plane you'll enjoy the acrobatics even more.

Back to Basics, Again!

Sometimes those of us who have been in this game a long time forget that most R/C fliers are short termers, or low-skill fliers. Learning to fly safely, and with complete control requires a lot of patient work and practice. It is a skill unlike any other, and is particularly difficult by the fact that the model's altitude and direction of flight is constantly changing in relation to the pilot. Full-scale flying is quite different in that the pilot/aircraft relationship always remains the same. In the latter instance, the learning process of relating control motions to aircraft motion is learned quicker. I contend that it is easier to teach a student to land a manned aircraft with repeatable accuracy, than it is to do the same with a model plane. Of course, the consequences of a bad landing in a manned aircraft are much more serious than with a model plane. It is also possible to instruct a pilot to fly a manned aircraft around the sky (nothing fancy) in the very first lesson without the student becoming disoriented. That doesn't often occur when teaching one to fly a model aircraft. We discovered some years ago that untrained people could learn to fly an RPV around the sky using a video image with only a few minutes of instruction simply because the operator/vehicle relationship never changes.

Usually a fledgling flier can learn to input the correct control motions fairly quickly as long as the model is moving away (tail view); when the plane turns toward him it's a different story. Of course other subtleties must also be learned rapidly such as how much control to input and how to handle the very strange roll control, i.e., input control and neutralize once the bank is established (unless one uses an autopilot). Some instructors tell their students to simply reverse their thinking when the model plane is headed toward them, i.e. move the aileron stick toward the low wing to level the aircraft. I personally do not think much or the latter technique. So, how do we proceed to learn all or this?

First or all, think or aircraft motion in response to control as rotation (in three axes) and not linear motion. Learn not to form a fixation on any part or the aircraft, but view the aircraft as a whole. Do not try to f1y the nose or the tail, the right wingtip, or whatever. The same goes for model helicopters.

Think of the motion generated as a rotation: a yaw, a pitch, or; roll. Confusion occurs when you use the tail or the nose as a point of reference and then try to figure out which way to move the rudder. To yaw right (rotate), the tail moves to the left. Confusing? You bet! Think also in terms of the direction desired (flight path); right aileron, right turn; right rudder, right turn. To descend) push forward; ascend, pull back (up). Once you have all or this firmly established in your mind, your perception of the aircraft motions will always be the same.

The next trick to learn is to imagine that your relationship to the model plane never changes. I don't mean that you will visualize yourself in the cockpit, but you will subconsciously be going for a ride. Once you have achieved this imaginary relationship, the aircraft motions will always be the same in relation to you as the pilot and you will learn much more rapidly. In fact, this is the only way you can ever be more than a "mechanical" flier. To protect the safety of your beautiful model you might use one of the flight training simulation programs available.

When model helicopters first came on the market, some flyers were trying to fly the tail to hover the craft, i.e. push the stick right and the tail moves right. Tile problem is that when one gets the model into forward flight the situation is reversed and then you are screwed up!

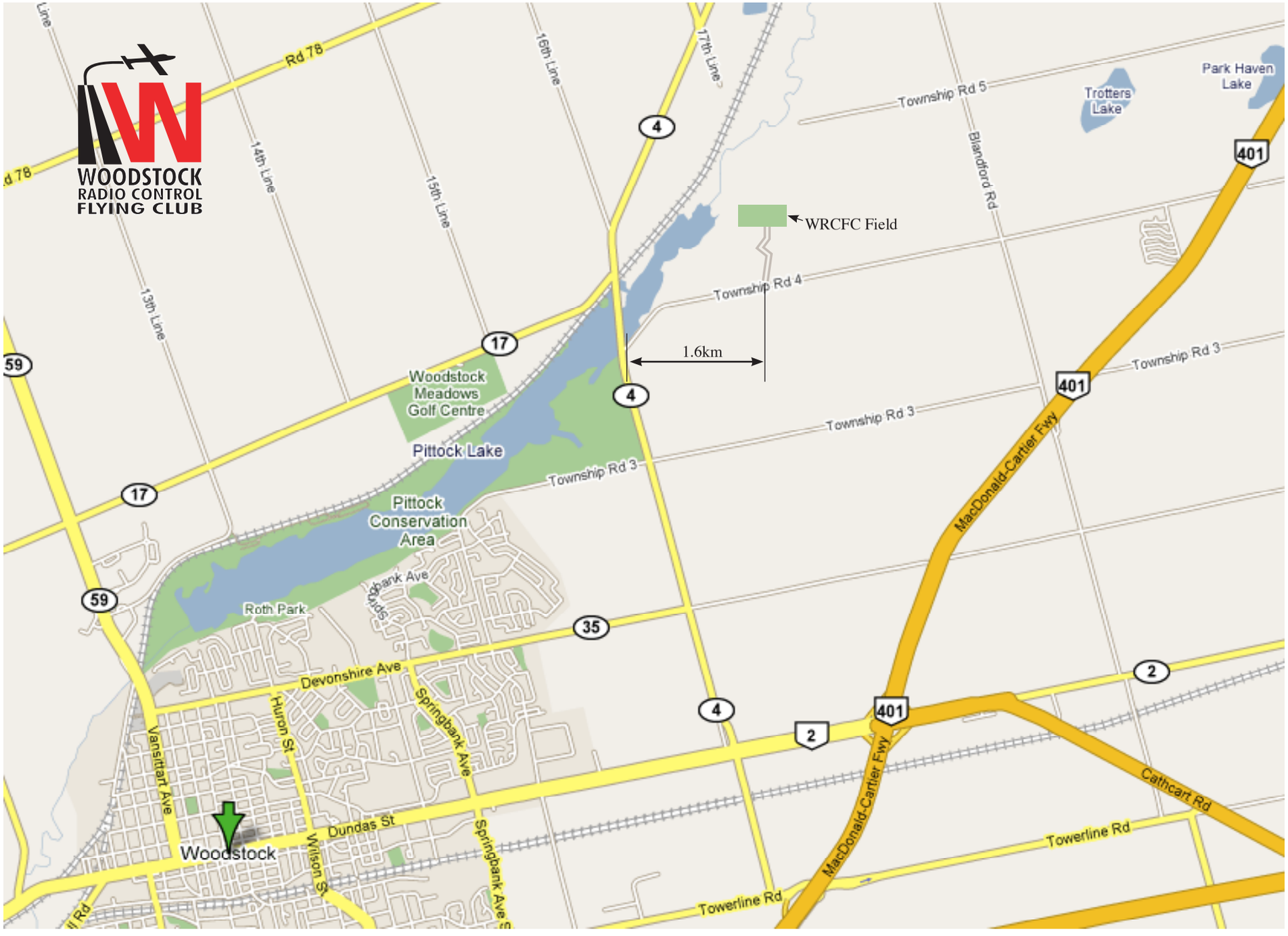
I think of chopper motions the same way as I do conventional models yaw right, turn right cyclic bank or translate right forward cyclic, descend or move forward throttle up, climb, and/or increase speed. I use the same transmitter control modes for both conventional model and choppers.

Some other tricks that will help you learning to fly: never squarely face the model flying toward you; it usually helps to turn your body so that you are always oblique to the model. Some even turn so much that they look over their shoulder when the model is headed toward them. This technique makes it easier to visualize your unchanging relationship to the model aircraft. Aircraft motions are always defined in relation to the pilot as if he/she were sitting in the cockpit, always stand, facing the runway and never turn to face the model when it landing. This helps in helps in other ways, such as maintaining a more optimum transmitter/receiver antenna relationship. I learned a long time ago never to point the transmitter antenna at the model, especially when head-on or tail-on since it is the minimum signal relationship and the most likely time you will have a glitch!

Most modelers over-control or over-fly their aircraft. The model should be trimmed for straight and level fight, hands off then you "disturb" it a little now and then. Now the aircraft do most of flying avoiding constant control inputs, Use a light touch and yes, even release the sticks now and then. A pattern flier works very hard to achieve model trim that allows one to input singular controls. For example, to perform a square loop just pull back on stick until vertical and let go; pull again and it is inverted (you will undoubtedly have to add a little down elevator while inverted) then pull again and again to complete a square loop, hopefully without having, to touch aileron or rudder! Why? Flying is much easier that way, and maneuvers are much more precise and repeatable. Try not to do anything in haste (unless you arc doing violent maneuvers). Cultivate a light touch, and a smooth input of control. Never use "step" input unless you are doing acrobatics.

You noticed that I said apply" down" elevator while inverted. That's because I always think of control motions and aircraft response as if I were in the cockpit. It doesn't matter what attitude the aircraft is in as related to the earth or to me standing on the ground. Obviously, you must also learn to consider the aircraft's relationship with the earth or the results will be disastrous! While you are in the early learning stages you should resist the urge to do wild maneuvering, but should slowly hone your skills and fly within your capability. Over the years I have observed many crashes resulting from fliers trying to fly outside their capabilities and winding up in the ground

Practice, practice, practice and then go out and amaze them.


WOODSTOCK
RADIO CONTROL
FLYING CLUB
WRCFC Field
1.6km
Rd 78
14th Line
15th Line
16th Line
17th Line
13th Line
Township Rd 5
Township Rd 4
Township Rd 3
Township Rd 3
Township Rd 3
Blandford Rd
Trotters Lake
Park Haven Lake
Woodstock Meadows Golf Centre
Pittock Lake
Pittock Conservation Area
Springbank Ave
Roth Park
Devonshire Ave
Huron St
Springbank Ave
Vansittart Ave
Dundas St
Wilson St
Springbank Ave
Woodstock
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