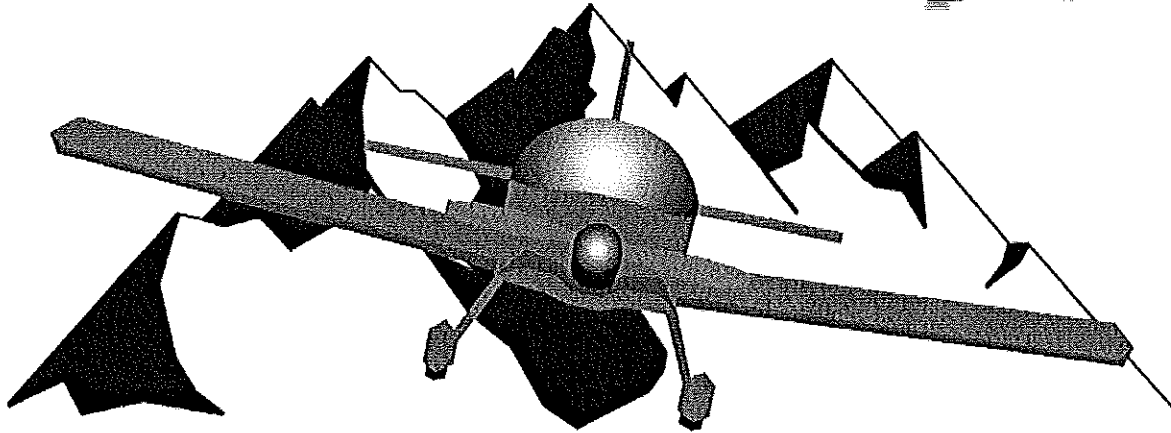


STUDENT HANDBOOK

LOVE AIR

RADIO CONTROL CLUB

LOVEAIR R/C



Loveland, Colorado

AMA CHAPTER #2356

TABLE OF CONTENTS

TABLE OF CONTENTS	2
1.0 Introduction	3
2.0 FLIGHT TRAINING	3
3.0 SAFETY	4
4.0 FLIGHT INSTRUCTORS.....	5
5.0 FLIGHT AREA	5
6.0 CHECKLIST	6
7.0 LOVE AIR R/C STUDENT PROGRESS LOG	7
8.0 LOVE AIR R/C FLIGHT LOG.....	7
REMARKS.....	8
Flight Time	8
Instructor	8
9.0 The Traditional Landing Pattern Approach	9
10.0 Flying Field Regulations and Procedures	11
Revised, Spring 2003	11
Section I – General	11
Section II – Safe Operation Procedures	12

1.0 Introduction

Love-Air R/C is a club organized to enjoy and promote the sport of flying radio controlled model aircraft. One of the benefits of being a club member is the flight training offered at no charge in a variety of subjects. The primary purpose of the flight-training program *is* to get new students into the air in a safe and organized manner.

Love-Air strongly urges all new students wanting to learn to fly RC models contact an instructor or other club member. It takes a lot of time, money, and effort to build an R/C model. Flying models can be very dangerous without the proper training. Do not try to fly one of these models without the proper training. No matter how many years you have been building models or even if you have flown full-scale aircraft, you will need help in learning to fly.

2.0 FLIGHT TRAINING

Love-Air flight training program for new students consist of a ten-step program outlined in the student progress log. The curriculum will be comprised of Love-Air and AMA safety rules, preflight inspection, use of frequency pins, *pit* safety and courtesy, use of trainer cord and buddy box if available, flight maneuvers such as figure eight and rectangular pattern, trimming the aircraft, stalls and slow flight, and takeoffs and landings.

Flight instruction is offered to any member at no charge. Beginner's night will be on Thursday evenings during Daylight Savings Time between 4:30 to 7:30 PM. Priority will be given to beginners flying with instructors. Anyone desiring instruction should come to the flying field on Thursday night or make arrangements ahead of time with an instructor. It *is* advisable to select an instructor with the same kind of radio with a trainer cord (see the list of instructors). A trainer cord system makes training much safer and less stressful.

When you have completed your model and are convinced it is ready to fly contact a flight instructor on the list. Arrange to meet with your instructor before the first flight or just come to the field Thursday evening to check out your equipment and airplane. There are many things that need to be checked and adjusted before the first flight. Your instructor will make suggestions on how to correct any deficiencies.

3.0 SAFETY

3.1 Safety is very important around model aircraft because of propellers, fuel, and speed to name a few. A five pound model traveling at 50 MPH can be deadly. With this in mind, a partial list of the Love-Air Flying Field Regulations and Procedures are highlighted. These rules shall be discussed with your instructor before the first flight. See section 9 for a complete list of the AMA Safety Code and Love-Air Flying Field Regulations and Procedures.

- 3.1.1 An AMA license is required (for insurance) to fly off the club field and the AMA safety code *is* in effect along with the club rules.
- 3.1.2 Frequency pins must be obtained before turning on transmitter.
- 3.1.3 When not in use all transmitters must be turned off and placed in the impound area.
- 3.1.4 Do a thorough preflight before each flight.
- 3.1.5 Do not fly over the pit area or the pit side of the runway centerline.
- 3.1.6 When starting or running your engine in the pit area, be sure the tail of your aircraft is pointed away from fellow pilots and aircraft.
- 3.1.7 No taxiing in the pit area. Have a helper carry your aircraft past the hold line. Optionally, keep the plane restrained until passing the taxi warning line.
- 3.1.8 Keep aircraft in designated flight area at all times (see section 9 Flying Field Regulations).

3.2 SUGGESTIONS FOR SAFE FLYING

- 3.2.1 Check for equal and accurate control of the plane's control surfaces when working with buddy cords and transmitters.
- 3.2.2 Multi-model transmitters have an additional chance of error by getting the wrong model selected for the plane to be flying.
- 3.2.3 Call takeoffs and landings. Have your spotter check before execution. Announce leaving the designated flight stations. Especially when approaching the runway. Sound off loud and clear when your plane is in trouble. Shout "HEADS UP". Point, or do something to get as much attention as possible. This is the spotter's job.

4.0 FLIGHT INSTRUCTORS

This is a list of Love Air Flight Instructors. All of these instructors are competent builders and flyers.

Instructor	Address	Phone	Radio	Trainer Cord	Instruction
Gene Burmeister	Windsor	674-9820	Futaba and Airtronics	Yes Yes	Student
Dennis Spencer	Greeley	330-8917	Futaba 6CH Futaba 9C JR Trainer	Yes Yes Yes	Student
Darwin Idler	Fort Collins	225-2431	?	Yes	Student, Pattern
Brayden Fisher	Fort Collins	207-1178	Futaba	Yes	Student, Helicopter

5.0 FLIGHT AREA

(Copied from Love-Air Flying Field Regulations - Part II, paragraph 5 & 6)

- 5.1 The established "flight area" begins at a line running north and south to infinity along the west edge of the runway. All flying activities shall take place east of this line. No flight or any part of a flight shall be made west of this line. All pilots shall execute the proper right or left-hand traffic pattern turn to ensure the line from the west edge of the runway will not be crossed by aircraft in flight. All takeoffs and landings shall be executed in the direction of the flight direction indicator. This means that all flying over the pilot stations, pit area, parking area or spectator area is prohibited.
- 5.2 The established "flight line" is a line that runs parallel to the runway, approximately halfway between the pit area and the runway, behind the safety barrier fence. Pilots shall remain at the flight line during takeoff, flying, and landing of their aircraft. The only exception will be student pilots who would be in better control of their aircraft, standing behind the aircraft on the runway during takeoff. After takeoff is complete and a safe altitude is reached, the student must return to the flight line for the remainder of the flight. Proper spacing between pilots at the flight line must be observed at all times.

6.0 CHECKLIST

Pre-Flight Check List

- Obtain frequency pin and transmitter
- Prop nut for **tightness**
- Prop blades for damage
- Muffler for secure mounting
- Fuel lines properly connected
- Engine securely attached
- Throttle linkage secure
- Throttle linkage adjusted
- Covering material secure and tight
- All flight control hinges secure
- No binding of controls or servo buzz
- All control linkage secure and adjusted
- Wing mounting secure
- Landing gear secure and adjusted
- Fuel tank full
- Check TX & RX battery voltage
- Range check radio
- Antenna fully extended
- Check radio trims
- Check control surfaces centered
- Flight controls move in proper direction
- Engine mixture and idle adjusted
- Start timer, Take-off!

Post-Flight Check List

- Radio TX & RX off
- If four or more flyers are present return frequency pin and transmitter to impound area, otherwise check with other flyers to see if there are frequency conflicts.
- Empty fuel tank clean aircraft and general inspection

7.0 LOVE AIR R/C STUDENT PROGRESS LOG

7.0 LOVE AIR R/C STUDENT PROGRESS LOG			
STUDENT _____		Instructor _____	
Address: _____			
Phone: _____		Model: _____	Radio Channel: _____
TASK			Date: _____
			instructor: _____
1.	Field safety Rules	Student will have a good understanding of Love-Air field rules, AMA Safety Code and use of Frequency Pins.	
2.	Preflight inspection	Instructor to determine that student's aircraft is in a safe and airworthy condition. Teach student to preflight aircraft before each flight.	
3.	Engine	Student will demonstrate safe and proper starting and adjustment of engine.	
4.	Flight	Student will become familiar with pre-takeoff check, straight and level flight; left and right handed turns.	
5.	Figure Eight	Student will become proficient at straight and level flight, trimming, and flying a figure eight.	
6.	Rectangular Course	Student will learn aircraft orientation, i.e. right / left control from ant position. Learn to keep the aircraft in a designated flight area and fly a rectangular course.	
7.	Complex Turns	Student will learn turns, steep bank turns, use of throttle, and recovery technique from steep spiral.	
8.	Stalls & slow flight	Student will learn turns, climbs, and decent in slow flight. Power on and power off stalls with appropriate recovery.	
9.	Takeoffs and Landings	Student will be proficient in takeoffs, landings pattern with airspeed control, approaches, and landings. Training will also include deadstick landings, crosswind takeoff / landings, go around, and engine failure after takeoff.	
10.	Aerobatics	Introduction to basic aerobatics such as rolls, loops, and split S. discussion of aircraft limitations, safe altitudes, effects of wind, and flying in control.	
11.	Pilot Exam	Student must be proficient in the following:	
	A.	Demonstrate safe operating procedures on ground and in the air.	
	B.	Taxi and takeoff with straight departure.	
	C.	Demonstrate control in flight.	
	D.	Demonstrate control with engine out. (Engine may be at idle)	
	E.	Demonstrate stalls and stall recovery.	
	F.	Perform standard landing with downwind, base, and stable final approach to full stop.	
Qualified as R/C Pilot Date: _____			Instructor: _____

8.0 LOVE AIR R/C FLIGHT LOG

9.0

STUDENT NAME _____

AMA# _____

DATE	REMARKS	AC TYPE	# of Flights	Flight Time	Instructor

10.0 The Traditional Landing Pattern Approach

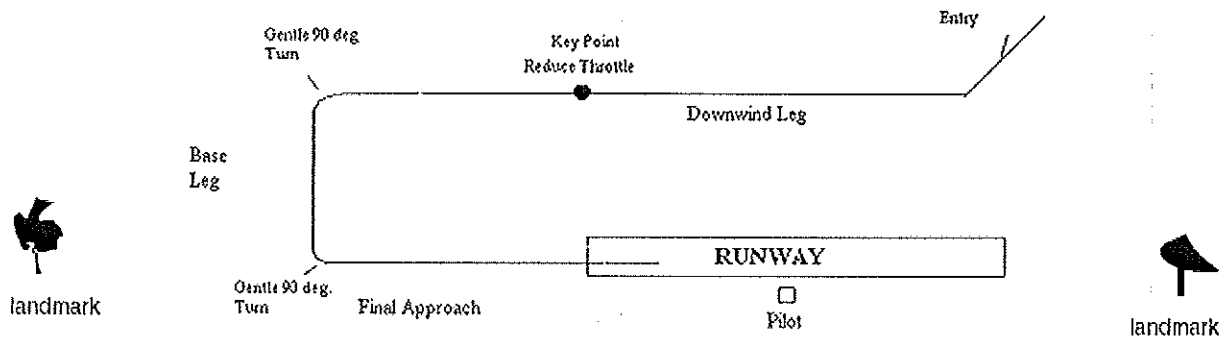
A condensed version of Frank Granelli's article found at:

<http://www.masportaviator.com/ah.asp?CatID=8&ID=20&index=0>

Assumptions: In this discussion wind will not be considered. Please see Frank's article for wind adjustments.

1. Instructor and Student Review of Landing pattern

- During pre-flight I recommend a walk with the student to the middle of the runway. Because of parallax from the flight stations a tall landmark can be better selected from the runway. Look for a landmark on the horizon which is in line with the runway. Find obvious landmarks in both directions. They will be used to achieve flight pattern alignment with the runway when flying ovals, rectangular patterns and landing approaches.



2. Downwind leg

- Because this is a training flight, it is assumed the plane is already flying a rectangle or oval pattern. All that is necessary to setup for a landing approach is to communicate landing intentions and adjust the plane's altitude to approximately 200 feet.
- The pilot flies the first part of the Downwind while maintaining straight, level flight. No other piloting task is required during this section, just straight, level flight.
- When the plane reaches a point opposite the runway end, the **Key Point**, the pilot reduces throttle to 2-3 notches above idle.
- The plane's nose will drop some and the plane will begin to descend. The pilot adjusts the descent angle by holding some "up" elevator while the plane is still flying straight. No other task is required at this time except to achieve the proper descent attitude¹. (Your instructor will help you achieve this attitude the first few times). Again only a single piloting task is required.
- The pilot has 150 feet of straight flight to achieve the proper descent attitude.

3. Base Leg

- Next a gentle, max. 45 deg. bank, 90-degree turn into the "Base Leg". The same descent rate is maintained in the turn; add a notch of throttle if required.
- Remember during a turn some lift is lost so extra up elevator is needed to maintain the proper descent rate. While existing the turn the elevator control should be returned to pre-turn position otherwise the plane will balloon up, losing all of your setup position.
- After the turn, the pilot only has to maintain straight, descending flight all through the Base Leg.

¹ An airplane's "attitude" is the fuselage centerline's angle in relation to the horizon. The centerline can also be thought of as the plane's "nose" position. If the "nose", spinner or propeller end, is pointed above the horizon by a 20-degree angle, the plane's attitude is said to be 20-degrees positive. If the spinner points 10 degrees below the horizon, the attitude is 10 degrees negative. Most RC trainers descend with a negative attitude. The descent attitude is therefore the amount the nose is pointing below the horizon.

- As the plane approaches the final 90-degree turn, the landmark (selected in step 1) should be visible in your peripheral vision; below the plane. This is your clue to begin **Final Approach**.

4. Final Approach

- Another gentle 90-degree turn will have the plane on a heading to the runway in a straight descending flight.
- If the plane's touchdown point appears short of the point opposite the pilot, add throttle. If the landing might be past the pilot, called "long", remove those last 2-3 notches of throttle.²
- When the plane is 100 feet away from the runway, take a moment to assess if the plane is on a straight line with the runway and the wings are level. If these conditions look good: the pilot only has to manage the touchdown point. Everything else has already been accomplished.³
- Once within 2-3 feet of the ground, just raise the nose slightly with up elevator, keeping everything else the same, and the plane will land main gear first in a straight line, right in front of the pilot. This is known as flaring the plane. A landing like that is what we all strive for. Quit for the day and savor the memory!

I used Frank Granelli's article as an outline to list the steps I feel are important in teaching model airplane landings. This paper is the quick read. Frank's paper goes into handling windy conditions and is an in-depth study.

² The correct airspeed is critical. In my opinion, air speed, engine RPM and elevator control influence descent rate the most. Until those three interactions are understood, landing on the mains will be difficult. Hence practicing slow speed approaches to within 10-20 feet elevation over the runway is paramount. If this task is un-achievable, the instructor should retune the engine for a 2500 RPM idle and have the student practice glide slope drills (engine at idle) in front of the student so (s)he can visually see how the descent angle and air speed are controlled with the elevator.

³ What is the proper descent attitude? While the student is learning what the proper descent rate is, I have noticed two extremes that are easily recognized. If it appears the descent rate is shallow and overshooting the runway is evident, slow the plane down by reducing the engine RPM. At the other extreme, the plane is going too slow if it is apparent it is going to land short of the runway. Other clues to this condition are a noticeable lack of aileron control. If the plane is really mushy with the controls and full aileron deflection is needed to have any effect on longitude control, advance the throttle a bit. Slow speeds and full up elevator is a precursor to a stall condition. Stalls are also an indication of being on the wrong side of the power curve (i.e. too slow and too much angle of attack). Stalls on the final approach (at low elevation) will cause a crash. Get your instructor to demonstrate stalls at higher elevations. This practice will for-warn you of any funny tricks your plane may have.

The following advice only works for me when the plane is over the runway, within 2-4 feet of the ground and airspeed less than 12-15 MPH. It is very visual in the 3D arena. If the airspeed appears too fast, add a little up elevator. If the plane is flying too slowly, you'll notice a very steep approach developing so add throttle and then release some up elevator.

10.0 Flying Field Regulations and Procedures

Revised, Spring 2003

Section I – General

1. The Love-Air R/C club flying field shall be used only for the purpose of model aviation and other related club activities.
2. The Love-Air R/C club flying field shall be used only by club members who are current with club dues, and are current members in good standing of the AMA.
3. Visitors (guests of a club member) may use the club flying field twice a year, provided they are current members in good standing of the AMA and are accompanied by the club member.
4. Only persons involved in flight activities are allowed in the pit area or beyond, toward the flight line. Spectators must remain in the parking area or in a designated spectator area.
5. Minor children must be supervised by their parent or guardian at all times. At no time, while aircraft engines are running, will children be allowed in the pit area.
6. All pets must be leashed and kept in the parking area or in a designated spectator area.
7. All vehicles must be parked to the west of the chain-link fence and shelter, behind the pit area.
8. All trash, litter and debris must be collected and properly disposed of at the end of each flying session. **NO BURNING ALLOWED!**
9. Pilots will not consume alcoholic beverages prior to, nor during, participation in any model operations.
10. The proper authorities should be summoned in case of any disturbance or emergency situation. Call 911, describe your type of emergency and ask for assistance. Describe your location as Highway 14, 4.5 miles west of Ault between county roads 25 and 27. The field is .3 miles south of the highway. If possible have someone meet them at the highway turn off and describe their vehicle to the emergency personnel. The coordinates for Drake Field are 40 degrees, 34.556 Minutes N, 104 degrees, 49.096 Minutes W. The field elevation is 5079'.
11. Updated materials and information will be posted on the frequency board. It is the responsibility of each member to keep informed.
12. **NO TRESPASSING** on adjacent property. See area map on frequency board for more information.

Section II – Safe Operation Procedures

1. It is recommended that a licensed driver other than the pilot be present during the operation of R/C aircraft to assist in the case of an emergency with the pilot. Do not fly alone.
2. When not in use, all transmitters must be TURNED OFF, and placed in the impound area located on the frequency control board.
3. To remove a transmitter from the impound area and turn it on, you must have the correct frequency pin, and your current Love-Air R/C card must be displayed on the frequency board in the slot that corresponds to your operating frequency.
4. The current AMA approved frequency display is required on all transmitters.
5. The established “flight area” begins at a line running north and south to infinity along the west edge of the runway. All flying activities shall take place east of this line. No flight or any part of a flight shall be made west of this line. All pilots shall execute the proper right or left hand traffic pattern turn to ensure the line from the west edge of the runway will not be crossed by aircraft in flight. All takeoffs and landings shall be executed in the direction of the flight direction indicator. This means that all flying over the pilot stations, pit area, parking area or spectator area is prohibited.
6. The established “flight line” is a line that runs parallel to the runway, approximately halfway between the pit area and the runway, behind the safety barrier fence. Pilots shall remain at the flight line during takeoff, flying, and landing of their aircraft. The only exception will be student pilots who would be in better control of their aircraft, standing behind the aircraft on the runway during takeoff. After takeoff is complete and a safe altitude is reached, the student must return to the flight line for the remainder of the flight. Proper spacing between pilots at the flight line must be observed at all times.
7. All pilots shall perform an adequate pre-flight inspection of their aircraft prior to flight to ensure it is in safe flying condition.
 - Check receiver and other on-board battery packs prior to each flight.
 - Check all moveable surfaces for proper deflection.
 - Check to ensure all wing bolts are screwed in tight or the proper amount of rubber bands is installed.
 - Check for equal and accurate control of the aircraft’s control surfaces when using buddy cords and transmitters.
 - When using multi-model transmitters make sure the right aircraft is chosen and that all of the control surfaces work in the proper direction and throw.
8. Engines may be started in the pit area only if a helper is holding the aircraft. Otherwise the engine must be started at the end of the taxiway east of the white lines.
9. When starting or running your engine in the pit area, be sure you are not blowing dust or dirt on your fellow pilots, their aircraft or flight boxes. Do not point your aircraft at other pilots and make sure no one is in the arc of your running propeller.
10. Engines must not be run at high rpm in the pit area.
11. NO unrestrained taxiing in the pit area.
12. Call out to the other pilots before entering your aircraft onto the runway. Call take offs and landings. Sound off loud and clear when your aircraft is in trouble such as a dead stick. Use a spotter when possible to help handle these duties.

13. For helicopter flying, all helicopter training and testing shall be done at the designated helicopter pad area and vertical flight shall be limited to 15 feet. All vertical and forward helicopter flights shall use the main flight line. When possible, use the airspace above the grass area immediately East of the runway so as not to interfere with aircraft in the standard oval traffic pattern.
14. All fixed-wing aircraft, regardless of size, will fly from the main flight line. All 3-D flying shall take place over the grass area immediately East of the runway so as not to interfere with aircraft in the standard oval traffic pattern.
15. All flying of "Free Flight" aircraft, rockets, and operation of remote controlled cars and trucks, etc. is prohibited.
16. All aircraft engines shall be equipped with appropriate sound reduction devices. The maximum allowable is 106DBA. The present club goal is 90 DBA. All aircraft are subject to sound testing. Please refer to the Love-Air R/C Sound Monitoring program manual.
17. It is the responsibility of all Love-Air R/C members to ensure these regulations are being adhered to by our fellow pilots when flying at our facility.
18. The Executive Committee of Love-Air R/C may determine appropriate action to be taken with any individual(s) who willfully and habitually pose(s) a threat to the safety of others due to reckless flight or other inappropriate actions while at the Club's flying field.

I HAVE READ AND UNDERSTAND THE RULES AND REGULATIONS FOR THE LOVE-AIR R/C CLUB. AS A CLUB MEMBER I AGREE TO ABIDE BY THE RULES AND ENFORCE THEM AS NECESSARY.

Name: _____ Signature: _____ Date: _____

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Copy to be signed and given to Instructor

I HAVE READ AND UNDERSTAND THE RULES AND REGULATIONS FOR THE LOVE-AIR R/C CLUB. AS A CLUB MEMBER I AGREE TO ABIDE BY THE RULES AND ENFORCE THEM AS NECESSARY.

Name: _____ Signature: _____ Date: _____