



**Levittown R/C Aerobugs, Inc.**  
International Miniature Aircraft Association  
Chapter 168

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Welcome to the sport of model radio control aviation, as enjoyed by the members of the Levittown R/C Aerobugs, Inc.

Please review the enclosed documents in the Club handbook:

1. Club Bylaws
2. Flying Field Safety and Operational Rules
3. Pilot Classification and Proficiency Requirements
4. "Getting Started in R/C" Article

Please study these documents and keep this handbook for future reference.



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## **BYLAWS**

### **PART 1 - BYLAWS**

#### **Article 1 – NAME/PURPOSE**

To secure and maintain the pleasures and benefits of an association between persons commonly interested in aero modeling and to further the interaction between its members, developing individual efficiency and promoting the avocation of aero modeling, we hereby constitute ourselves the LEVITTOWN R/C AEROBUGS, INC., hereinafter referred to as the “Club”, and do enact these bylaws as our governing law.

#### **Article 2 – MEMBERSHIP**

Persons shall be eligible for membership in the LEVITTOWN R/C AEROBUGS, INC., provided that they meet the following qualifications:

##### **Section 1 – Qualifications**

- a. Must have a current A.M.A. membership.
- b. Must have a current F.C.C. license, if on the 6 meter band.
- c. Must exhibit a willingness to comply with all the club's bylaws and safety rules. (See Section 2d)

##### **Section 2 – Prospective Members**

- a. Must be sponsored by a member in good standing and must be approved by a majority vote of the membership at a regular monthly meeting.
- b. Prior to or concurrent with being voted upon, a prospective new member must attend one meeting and present to the Treasurer proof of current A.M.A. membership, their home address and phone number.
- c. Prospective members (provided that they are A.M.A. members may fly as a guest member two (2) times for free and at four dollars (\$4.00) per flying session thereafter, which is deducted from their initiation fee.
- d. All applicants for membership will be given a copy of the Bylaws and Flying Field Safety and Operational Rules and, upon joining, will return to the club Secretary a signed receipt for same, acknowledging that they understands and will comply with the rules.
- e. An ex-member who has left or resigned from the Club as a member in good standing may make application for Club membership and rejoin without payment of the normal initiation fee, subject to the Club size limitations and payment of proper dues.

### Sections 3 – Club Member Size

- a. The Club membership shall be limited to seventy-five (75) permanent members plus additional Associate Members as deemed appropriate by the Executive Board.

### Article 3 – OFFICERS

The officers of the LEVITTOWN R/C AEROBUGS, INC. shall be President, Vice President, Treasurer and Secretary.

### Article 4 – EXECUTIVE BOARD

The Executive Board shall be comprised of the President, Vice President, Treasurer and Secretary, plus the Chairpersons of the active committees.

#### Section 1 – Committees

There shall be the following authorized committees, activated by the Executive Board as needed:

- a. Field Maintenance Committee – Responsible for maintenance, improvement and overall upkeep of the flying field.
- b. Events Committee – Responsible for organizing fun flies, picnics, contests and entertainment at meetings.
- c. Newsletter Committee – Responsible for the gathering and editing newsworthy and instructional information and publishing and distributing such data in the Club newsletter.
- d. Technical Committee – Responsible for technical matters including recommending frequency control procedures, keeping members advised of new developments with respect to radios, planes and engines and investigating interference problems.
- e. Flight Safety and Training Committee – Responsible for recommending flight safety rules, monitoring adherence by members to flight rules, developing standardized training procedures and test for new pilots and recommending disciplinary action when necessary. Also, recommends to the Executive Board candidates for Instructor Pilots and Head Instructor.

Instructor Pilots will be selected by the Executive Board according to their flying and teaching ability. Any Senior Pilot wishing to be designated an instructor will place their request with the Executive Board. Any Pilot Instructor wishing to be designated Head Instructor will place their request with the Executive Board.

### Article 5 – ELIGIBILITY FOR OFFICE

Any member in good standing shall be eligible for office.

#### Article 6 – TERM OF OFFICE / AUDIT

The Club officers shall be elected for a term of one (1) year at the November meeting by secret ballot of paid-up members present, except for the Treasurer who will be elected for a term of two (2) years.

The Club's financial records and bank account shall be audited annually in October by a team of three (3) Club members, to be appointed by the Executive Board. The team will report their findings to the general membership at the November meeting.

#### Article 7 – START OF TERM

The new officers start their term of office at the January meeting of each year. At least two (2) weeks prior to that meeting all Club books and records shall be turned over to them by the outgoing officers.

#### Article 8 – DUES AND INITIATION FEE

- a. Annual dues shall be paid on or before December 31<sup>st</sup> at a rate per the fee schedule published in the Membership Application.
- b. Initiation fee for new members is fifty dollars (\$50.00) and is payable to the Club at the time of acceptance as a new Club member.
- c. Dues will be pro-rated for the balance of the year remaining after April 1<sup>st</sup>.
- d. A non-member youth 18 years of age or under must be sponsored by a Club member who must take complete responsibility for this youth member at the field. A youth who is a member will be assessed dues in accordance with fee schedule published in the Membership Application.
- e. Annual dues will be refunded on a pro-rated basis when a member has to leave the area due to job or other necessary relocation.

#### Article 9 – MEETINGS

Regular monthly meetings will be held on the first Wednesday of each month. Special meetings may be called by the Club President.

#### Article 10 – REGULAR BUSINESS

- a. All business will be conducted by the Executive Board and presented to the membership at the regular monthly meeting. The Executive Board will meet once each month prior to the general membership meeting.
- b. The Executive Board is empowered to commit funds or make obligations not exceeding the approved budget for that year on Club business without prior approval from the general membership. Any such expenditures or obligations will be reported at the next general meeting.

#### Article 11 – RETENTION OF ACTIVE MEMBERSHIP

- a. All members are required to pay the Club dues on or before December 31<sup>st</sup> of the prior year in which the dues will be applied. Any member who has not reached a paid-in-full

status by December 31<sup>st</sup> and has not contacted one of the Club officers by that date will be automatically dropped from the Club.

- b. Hardship cases may be presented to the Executive Board at any time before the member becomes three (3) months delinquent. This means that they will contact one of the Club Officers prior to December 31<sup>st</sup> in writing.
- c. Membership will be automatically be renewed at the beginning of each new year. However, no new membership card will be issued unless evidence of current AMA membership can be presented to the Club Treasurer. Failure to produce this evidence on or before December 31<sup>st</sup> will cause the delinquent ex-member to not be able to fly at the field until they have their current AMA membership.



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**PART II – FLYING FIELD SAFETY AND OPERATIONAL RULES**

Club flying safety rules will be in accordance with the A.M.A. Safety Code and are as follows:

1. I will have completed a successful radio equipment ground check before the first flight of a new or repaired model.
2. I will perform my initial turn after take-off away from the flightline, spectators and parking area and I will not thereafter perform maneuvers, flights of any sort, or landing approaches over the flightline, spectator or parking areas.
3. There will be no flying within 30 feet of the flightline. This applies to fixed and rotary wing aircraft. There will be no taxiing or flying behind the flightline.
4. All transmitters at the field must be on the flightline or in your car.
5. Whenever a transmitter is turned on for any reason at the flying field, the operator will have the correct frequency pin on the frequency board. Frequency pins will not be passed hand-to-hand to others who are waiting to fly on the particular frequency. Each member is responsible for their own pin which must be properly annotated with the frequency number and pilot's name.
6. Mufflers or some type of noise suppressor will be used at all times. If there is a dispute, an impartial team of three club members will rule and their decision will be final.
7. Extreme care of the farmer's crops must be observed at all times.
8. There will be no littering of the field by anyone. All members will be responsible for their own litter and its removal from the club field.
9. Parking at the field will be only in the prescribed areas and in such a manner as not to block another car.
10. Spectators must remain behind the designated line at the flying field.
11. Members whose children or pets are present at the flying field are responsible for keeping them under control at all times.
12. Any member who causes damage to another's equipment through accident or neglect, will see that same is either repaired or replaced by member causing the incident. A gentlemen's agreement between the parties concerned to settle the problem within a reasonable period of time will be made at the time of the mishap. If this does not take place within the agreed period, the offending member will be automatically expelled from the club.
13. Anyone entering or departing from the field by auto or motorcycle shall not exceed 15 mph on the entrance road or 5 mph in the club parking area.

14. All transmitters will display a channel placard plus a red "72 MHz Aircraft Use Only" pennant or the member may not fly.
15. Members may have one guest per flying day. Guests must show a current A.M.A. membership card. The same guest may visit only two times free. After that, they may apply for membership, if membership is open, or may fly by paying \$4.00 per flying day. The member is responsible for their guest to include a briefing of all the club flying field rules and collecting the \$4.00 field fee if their guest continues to fly after their two free sessions. The money is to be turned over to the treasurer as soon as possible.
16. Club members may fly only at the designated times for the particular field being used. Flying time at Jacksonville field is 9:00am to dusk on weekdays, 12 Noon to dusk on Saturday and 11:00am to dusk on Sunday.
17. All helicopter flying will be downwind from the flightline.
18. Rotary wing aircraft will obey all fixed-wing landing patterns.
19. In the event that a member or group of members repeatedly conduct themselves in such a manner as to be contrary to the A.M.A. SAFETY RULES or Bylaws of the Levittown R/C Aerobugs, Inc., that member or members will be, upon review and recommendation of the Executive Board and the majority vote by the general membership, expelled from the club at the next scheduled or specially convened meeting. In the event that it becomes necessary to expel a member who has paid their current year's dues, said dues will be prorated and the unused portion will be refunded.
20. There will be no flying while the field is being mowed.
21. Members shall display openly their up-to-date Student, Intermediate, Senior Pilot or Instructor Pilot name tags when flying at the field.
22. Only Narrow-band "Gold Stickered" transmitters may be used at the Jacksonville field.



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**PART III – PILOT CLASSIFICATION AND PROFICIENCY REQUIREMENTS**

1. A Student Pilot may not fly alone. A Student Pilot may only fly when under the direct supervision of a Flight Instructor.
2. A Student Pilot will be awarded the rating of Intermediate Pilot when they have demonstrated the ability to consistently and safely fly solo as detailed below:
  - a. Flying Ability – The Student Pilot or new club member who professes to be an accomplished R/C flyer must demonstrate to both their Flight Instructor and the Flight Safety Officer the ability to safely perform three (3) successive takeoffs and landings without incident from both left-hand and right-hand rectangular traffic patterns. A consistent level of expertise must be exhibited.
3. An Intermediate Pilot may fly solo at any time with the same class of airplane as used to demonstrate their proficiency under Section 2a. The Intermediate Pilot may not fly a more advanced type of aircraft solo until they have received flight training from a Flight Instructor on that aircraft and demonstrated the same proficiency with the type of aircraft as described in Section 2a. Examples of transitions from different classes of airplanes that will require certification for solo flight are as follows:
  - a. No ailerons to Ailerons
  - b. High wing trainer to Low wing or biplane
  - c. .40 or .60 size to ¼ or larger scale
4. An Intermediate Pilot will retain that classification for a probationary period of at least twelve (12) months, during which time they are expected to improve their flying skills and demonstrate their ability to fly safely, observing all flight rules and field etiquette.

If, by the end of twelve (12) months the Intermediate Pilot has satisfactorily demonstrated their flight growth ability, they will be awarded Senior Pilot status.

If, by the end of twelve (12) months the Intermediate Pilot does not demonstrate the ability to fly safely, observing all flight rules or field etiquette to the satisfaction of the Flight Safety Officer, they will be returned to Student Pilot status, or other action will be taken as deemed appropriate by the Flight Safety Officer (FSO) and the Executive Board.
5. New club members who demonstrate that they can fly solo can be advanced directly to the rank commensurate with their flying ability after meeting the requirements of Section 2a.
6. All Senior Pilots are expected to maintain their flying abilities and fly safely, observing all flight rules and field etiquette. If they do not, the Flight Safety and Training Committee, with the approval of the Executive Board, reserves the right to take appropriate action including the possible revoking of that member's flying privileges.

7. Only those individuals holding the rating of Flight Instructor are permitted to supervise the flying of a Student Pilot. To qualify for the rating of Flight Instructor an individual must meet the following requirements:
  - a. Hold a rating of Senior Pilot.
  - b. Possess a thorough knowledge of A.M.A. and Levittown R/C Aerobugs rules governing flight safety.
  - c. Demonstrate to the satisfaction of the Flight Safety Officer and the Head Instructor, above average flying skills and communication/instructional ability.
  - d. Express a desire to become a Flight Instructor and a willingness to devote their time and expertise whenever possible to the training of Student Pilots.
  - e. Be selected by the Executive Board with the advise and counsel of the Head Instructor and Flight Safety Officer.



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**Part IV - Getting Started in R/C**

Welcome to the action-packed world of radio control or R/C as it is commonly called. For as long as motorized vehicles have been in existence, people have been enthralled with the idea of operating them by "remote control" without actually being inside the vehicle. For many years R/C was an activity that only government engineers and electrical wizards could understand, but in this modern age, thanks to micro electronics, R/C is a fast growing hobby that anyone with average skills can enjoy. R/C hobbyists can successfully build fully functioning miniature replicas of airplanes, helicopters, boats, cars, tank and even submarines.

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**Questions Often Asked By Beginners**

**Q. I want to fly an R/C model airplane. How do I start?**

**A.** Find out if there are any R/C'ers in your area and where they fly. Most hobby shops are a good place to start asking questions and will know about the R/C activity in your area and can get you in touch with the local flyers and model clubs. Still in doubt? Check the Yellow Pages of the phone directory for Hobby R/C's or check the newspapers to any upcoming events that will be held. Even TV will cover these events. Then come out to the field. You will be greeted by any and/or all of the hobbyists and they will try to give you the best possible information available. Don't be shy. Tell them you are thinking about getting started in R/C. Learn from other flyer's experiences. For the name of a club in your area, write to the Academy of Model Aeronautics at 1310 Samuel Morse Drive, Reston, VA 22090.

**Q. How much does it cost?**

**A.** Like any leisure time activity, R/C has some initial start-up costs. The initial investment might seem high to the newcomer, but once you are established with a model, engine and radio, the costs stabilize and can be as much or as little as you want to spend. Engines and radios last for many years. With a little maintenance, they rarely wear out. In fact, you can build and fly several different models and use the same engine and radio in them all. So the question, "How much does it cost?" will depend on your future goals in the hobby. To start, let's take a look at the cost of a typical beginner's package. You will need:

Mid-size R/C Trainer Model Kit	\$65.00
.40 Cu In. 2-stroke Model Engine	85.00
4-channel Radio Control System	225.00

Glue, covering, accessories	55.00
Fuel, basic field equipment	<u>30.00</u>
Total Approximate Start-up ...	\$ 460.00

**Q. How far do they fly?**

**A.** Modern radio control systems have a range of 1 or 2 miles. However, it is very rare that model airplane is ever flown that far away. A model with a wingspan of 5 or 6 feet will become a small speck in the sky at ½ mile out, so you will rarely fly at that distance because it is almost impossible to see what the model is doing. Most R/C flyers keep their models within 200 or 300 yards of themselves.

**Q. How fast can they fly?**

**A.** A typical trainer model usually flies in the neighborhood of 60 mph. More advanced stunt models will fly a little faster, at about 80 to 100 mph. And for the real expert, R/C racing models often fly at 140 mph or more.

**Q. What happens when the engine stops?**

**A.** A common misconception among the general public is that control of the model is lost if the engine quits in flight. That is NOT true! The radio system will still function normally since it is powered by its own on-board battery. If the engine quits in flight you simply glide the model in for a landing (or crash) depending on your expertise in handling dead stick landings.

**Q. Can I buy an airplane that is ready to go?**

**A.** Not normally. Most of the models that you see at the flying field were built from a kit by the flyer himself. That's half the fun of R/C'ing. You, as the builder, get to know the function, terminology and the problems of balance, placement of components, break-in of the engine, and finally the thrill of flying your creation.

That said, there are an increasing number of ARF (Almost Ready-to-Fly) airplanes available from hobby shops. These typically require anywhere from 2 – 20 hours of assembly time, but come with the major components (fuselage, wings, etc.) built and covered.

### **Q. Are model planes hard to build?**

- A.** No! Balsa model airplanes are not difficult to build by someone who can master a few basic woodworking skills, primarily the use of a modeling knife and a sandpaper block. A typical kit includes all of the parts to build the basic airframe of the model, plus step-by-step instructions for putting the parts together. The radio, engine, fuel tank, wheels, covering material and glue are purchased separately. Construction time for a typical trainer model will be about 50 to 75 hours. Lots of help is available. All you have to do is ask.

A few basic tools are needed for building balsa model airplane kits:

- FLAT building board that pins can be pushed into. It should be large enough to build half of the wing at a time.
- Modeling knife (an X-acto #1 knife with a #11 blade to start with)
- Razor saw (X-Acto or Zona)
- Needle-nose pliers, small screwdrivers, T-pins, drill and a set of twist-drell bits (1/16" thru 1/4" dia.)
- Sanding block and assorted sandpaper
- Soldering iron and rosin core solder
- Heat sealing iron for applying iron-on covering.

These tools are the start of a typical model builder's workshop. While you can build most model airplane kits with these few basic tools, there are other tools that can make the job easier – a Dremel tool, jig saw, disc sander, razor blades, different size modeling knives, etc. If you stay with the hobby, you will eventually want to add other tools to your shop.

### **Q. Do I need a license to fly R/C airplanes?**

- A.** No. You do not need a license to fly R/C. However, there is a governing body for all model aviation activities in this country called the Academy of Model Aeronautics (AMA). The AMA is recognized by the federal government as the official spokesman for all model flyers in the United States. As part of its duties, the AMA works closely with the Federal Communications Commission (FCC) to see that certain radio frequencies are set aside for the exclusive use of modelers. While membership is not mandatory, it is a good idea and all new R/C flyers

are encouraged to join the AMA. IN addition to supporting the hobby, AMA membership provides you with important liability insurance protection in case your model should ever get out of control and cause property damage or personal injury. You will find that many model airplane clubs require all of their members to join the AMA for their mutual protection. AMA membership also includes a one-year subscription to Model Aviation, a monthly magazine covering all phases of model flying, including a schedule of flying events all over the United States. This is an open invitation to visit with other clubs in other cities and states, participate in the flying events and enjoy this fascinating hobby.

### **Q. What kind of radio do I need?**

- A.** When you start looking at radio control systems, you may be confused at first by the many different brands, different styles and different features that are available. R/C systems are just like TV's, VCR's or stereos, in that you can buy a 'plain Jane' basic system or one with more extra 'whistles and bells' than you can remember how to use. And the difference between the basic and full-loaded systems will be reflected in the price.

Obviously, you do not need a super sophisticated radio to start out with. With high recommendation it is suggested that you look at less expensive 'sport' type radio system. Most of the radio manufacturers market a basic 4 channel radio designed for beginning or sport R/C flyer. These are good quality, dependable radio systems that you can operation with confidence – you just don't have all the extra features that the higher priced radios have.

### **Q. Which airplane should I buy first?**

- A.** By all means, get a specially designed TRAINER airplane. A boxy looking trainer may not be beautiful to look at, it may not be exciting to dream about, but it will have the flight characteristics that you need for learning to fly R/C. Most people starting in the hobby have visions of themselves piloting a sleek, fast fighter plane with retractable landing gear and dropping bomb, but that is exactly what the DON'T need.

As an example, I happened to be in a large hobby store in California and overheard the following incident. This person had selected a scale P-51 Mustang kit, retractable landing gear units and the most expensive hi-power .60 in the store. He was looking at 7-channel radio sets and want to know what frequency would be the best. The conversation soon turned up the fact that he had never flown any kind of model airplane before, but he had seen some R/C models flying at an airport dedication show over the past weekend and was

instantly hooked. As tactfully as possible, the salesperson, an experienced R/C'er, told him that he should not try to fly the P-51 without some previous experience with an R/C trainer. His quote was, "I'm not interested in those funny looking trainers. I want a scale model of a real airplane. Besides, I won't need a trainer. I've got 3,000 hours in full-sized aircraft."

Needless to say, the party could not be convinced to start small and work up to scale. He purchased all of the equipment and in less than ten days was back in the store making the purchase of a .40 Trainer and was overheard saying, "I crashed the P-51 on takeoff, now I'll build a trainer. I also have an experienced instructor who will not only teach me to fly, but also help build the trainer."

This story is not intended to put down any beginner, because many others have made this same mistake with the exact same results. So resist the temptation to build your dream ship right away, save it for later. The U.S. Air Force doesn't start its flying cadet in F-15's and you should take the same approach in learning to fly R/C.

Your first R/C model should be an airplane that is designed to be a trainer. It should be a 'high-wing' airplane (wing mounted on top of the fuselage) for best stability in flight. A high-wing airplane is more forgiving of pilot errors than any other type. Your trainer should also have a flat-bottom wing 'airfoil' (the cross section shape of the wing) so it can fly slow enough for you to keep up with it. A generous amount of 'dihedral' (the upward 'V' angle of the wings when viewed from the front) is another characteristic to look for in a good trainer design.

### Q. Can a beginner teach himself to fly R/C?

A. If you have unlimited funds, all the time in the world and no other obligations, perhaps, but it is not recommended. Learning to fly R/C model airplanes is not a skill you can learn overnight. It is very similar to learning to fly real airplanes in that you should go through a learning phase with an instructor before you try to pilot the airplane yourself.

### Q. Why do I need an instructor?

A. An instructor serves two purposes. First he will fly your model for the first time to make sure it is performing properly before you try to fly it. When a new R/C model takes off for the first time, there is no way of knowing which way it is going to go. Some models will try to climb while others may want to go down. Some will try to turn left, others right. Some models will be doing both at the same time on the first flight. It doesn't mean that there is anything wrong with the mode, but these minor differences

me be 'trimmed out' in order for the model to fly properly straight and level. That's why a new model's first flight is best done by a pilot who has flown an R/C airplane before - someone whose reflexes are already conditioned to anticipate the model's actions and instantly makes the right move to counteract.

The second reason for an instructor is to correct any mistakes you may make when you take over **the** controls for the first time. Let the instructor get the model airborne and flying level at a safe altitude 'several mistakes high', as the old saying goes, before he turns the control box over to you. You will quickly find out that it is very easy to over control an R/C model and to get disoriented - **EVERYONE DOES AT FIRST!!!**

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## TRAINER TIPS

For those that are relatively new to R/C, here are some insider tips you may utilize when constructing your first aircraft. Whether your plane is built from scratch, kit, or ARF (Almost Ready to Fly) the following suggestions will enable the aircraft to withstand greater stress. It seems as though kit and ARF manufacturers assume minimal abuse, which is simple not the case.

- Reinforce the firewall with one-half inch triangle stock. Glue these in with 30-minute epoxy. This area of the model incurs a great amount of stress and you don't want your engine and firewall pulling away from the rest of the fuselage. Using thick CA glue, make fillets on all exposed joints inside the fuselage. Don't be concerned with the added weight, as the aircraft is a trainer and has more than enough lift to compensate.
- Always fuel proof the engine and fuel tank compartments of your aircraft. Failure to do an adequate job will result in oil-soaked wood and lessen the durability of the airframe. An effective and easy method to accomplish this is to mix small quantities of 30-minute epoxy with a few drops of common rubbing alcohol, so that it has the consistency of maple syrup. Then with an epoxy brush, with its bristles cut to about one-half of its original length, coat both compartments completely and allow to dry. A word of caution about epoxy - never mix large quantities because the chemical reaction which occurs when the epoxy and hardener are combined speeds up tremendously with volume! Be careful not to add too much alcohol because doing so will extend the drying time to days rather than minutes and may fail to cure at all.
- Reinforce the fuselage on the inside where the landing gear is attached. I recommend epoxying a piece of aircraft grade plywood across the

entire area and further reinforce the sides with the left over triangular stock from the firewall work. Most kits and ARF's come with piano wire landing gear and while it may be for a short time, after two or three hard landings, and I guarantee there will be some, they'll squat to the point that ground handling may become difficult and the wing's angle of attach becomes excessively positive, leading to premature liftoffs and possibly a stall. If your plane is doing this replace the wire gear with Dural landing gear available at the hobby shop. The plan's landing characteristics will be greatly enhanced and it will be able to withstand those OOPS landings.

- Make sure the connections from the push rods to the servo arms are Z-bends. Don't use the quick connectors for any critical flight control. I have seen these types of connections fail. The throttle connection is the only one I'd use a quick connect on. Slip short pieces of fuel line over the connected clevises to prevent them from detaching from the control horns.
- Always, without exception, reinforce the wing joint with fiberglass cloth and epoxy. Failure to do this will almost certainly lead to the wings folding in a high-G maneuver. Don't use the cloth provided in the kit. Go buy some from the hobby shop and cut a piece out of the sheet at a 45-degree angle to the wave of the cloth. The strip should be at least three to four inches in width and long enough to wrap around the joint completely. Use 30-minute epoxy, slightly thinned with alcohol, and cover the area on the top of the wing that will hold the cloth. Lay the cloth on the joint and press it into the epoxy. Use an old credit card or some type of card and squeegee the cloth so that it is completely saturated with epoxy and is completely adhered to the wing and that no air pockets are present. Remove any excess epoxy and repeat the procedure for the bottom of the wing joint. Although this procedure is done in two parts, use the one piece of fiberglass cloth. Once the epoxy has cured, you'll have a wing joint that can withstand those emergency maneuvers.
- When installing your receiver and battery pack be sure to wrap both in foam rubber and rubber bands. Always enclose the pack in several plastic sandwich bags and close the end up tight with either rubber bands or a plastic tie to prevent a fuel leak from shorting out the electrical system.

Performing the above procedures will modify your aircraft to withstand the rigors of training and will give you more time in the air.

The following is a short explanation of some common terms you'll be hearing or reading:

**CG – the Center of Gravity.** This is the point at which an aircraft is at balance. It is usually located just behind the leading edge wing sheeting. It's perhaps the most important aspect in building models. The C.G. is the point in the pitch (up and down) axis and lateral balance is the point in the roll axis. Both are critical and must be correct.) An aircraft just be in balance to be controllable.

**LE – the Leading Edge.** This is the front portion of the wing and stabilizers which encounters and cuts through the air.

**TE – the Trailing Edge.** This is the rear portion of the wing and stabilizers.

**Angle of Attack** – This is the angle which the wing of the aircraft encounters the air it is flying through.

**Airfoil** – This is simply the shape of the wing. Trainers have an airfoil that is rounded on the top and flat on the bottom. The type creates the most lift. The other end of the spectrum is the fully symmetrical airfoil. Its curvature is the same on the top and the bottom and is commonly found on high performance aircraft. There are many variations for airfoils available.

**Washout** – This refers to the amount of twist put into the wing tips to force the wing at its root, (nearest the fuselage) to stall before the tips of the wing. Wash is responsible for nice slow landings without tip stalling the wings. It also causes nice nose dropping stalls rather than a tip stall, possibly leading to a spin.

**Stall** – This is simply the point at which the wing cannot produce sufficient lift to keep the aircraft flying. When this occurs, the aircraft stalls and either drops a wing tip and heads toward the ground or drops its nose and proceeds downward until sufficient airspeed is gained at which point a full recovery is possible.

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### **Choosing the Right Airplane**

There seems to be an amazing and consistently growing number of airplanes to choose from. For the beginner, it can be an overwhelming choice. Even the more experienced modeler can buy a real lemon. Based on my experience and suggestions from other, I've assembled a list of airplanes to consider. It's not an exhaustive list by any means, but it is a place to start.

#### **- Trainer Airplanes -**

Usually a trainer is a high-wing, flat-bottom airfoil, tricycle landing gear with a .40 to .60 engine. While these are not scale models, they look most like a high-wing Cessna or Piper Cub.

**U.S. Aircore Family Trainer** – One of the most durable trainers around. Because the kit is constructed of corrugated plastic, it will survive crashes which would demolish a typical balsa model. If you are

learning to fly and prone to mishaps (as most beginners are), strongly consider this trainer. Cost – About \$75

**Great Plane PT-40** – This is a high-wing trainer costing about \$55. Quite a few people have learned to fly with this airplane. Great Planes is known for excellent instructions and easy to assemble pre-cut balsa components.

**Midwest Aerostar 40** – One of the most popular trainers, a “classic” trainer design. Easy kit to build. About \$71.

**Right Flyer 40T (ARF)** – A relatively inexpensive (\$90) ARD with classic trainer dimensions. I learned to fly with this airplane.

**Other good trainers include:** Top Flite Sierra, Tower Trainer 40 ARF, Flightstar 40 ARF, Avistar 40 ARF, the Royal 40T high-wing trainer ART, Goldberg Eagle II, Telemaster 40 and Sig Kadet.

### - Second Plane -

Somewhat more aerobatic than a trainer but still relatively stable, a second airplane typically has a semi-symmetrical airfoil. It can take many shapes but it is not scale WWII or a biplane.

**Big Stick Family** – There are several airplanes all from the “Stick” family which serve as excellent second airplane. Great Planes make .20 (\$53), .4(\$60) and .60 (73) Big Stick kits (the .20 is not recommended for grass fields). For those who prefer not to build, a Sweet Stick ART is about \$90.

**Royal 40L and 40S** – The 40L is a low-wing tricycle design and the 40S is a mid-wing or shoulder model – the same wing on both planes.

**Goldberg sky Tiger** – You see several people with the semi-symmetrical low-wing tricycle design.

**Sig Astro Hog** – In the 1950's this was a pattern plane. However it's semi-symmetrical wing makes it a reasonable second plane.

### - Aerobatic -

Definitely for the more advanced flyer, these planes can do things in the air that few other airplanes can do.

**Goldberg Ultimate Bipe** – One of the best aerobatic flyers around Available as a kit (\$117) or an ARF (\$240).

**Four Star 40** – It's fairly light making it very nimble in the air. Costs around \$51.

**Other Aerobatic Planes** – SIG Kougur, SIG Kobra, Great Planes Super Sportster, Ultra Sports, Fun One, and Super Decathlon 40.

### - Scale -

Airplanes designed to look like a miniature version of an actual airplane can be fun. They can also be frustrating because they are often less stable in the air, require more time to build and are more fragile in the event of a crash. Some of the better kits are:

**Top Flite F4U Corsair** – A recently introduced kit, it costs around \$125.

**Great Planes P-51D** – Costs around \$75

**Davis Systems Eindecker** – Small plane which flies easily. Put a Cox .74 engine in it, not the .049 Cox engine. Kit costs about \$22.

Several companies make a series of warbird kits. For example, Midwest makes a Mustang .40 (\$78) and .60 (\$129). Messerschmitt .40 (\$78) and Zero .40 (\$86). Corsairs and Spitfires are also popular. For jet-like appearance without the ducted fan, Great Planes F14 Tomcat and Patriot look interesting. However, I could not find anyone with direct experience with either one. (The Patriot is not actually a scale airplane.)

### - Gliders -

Nice, easy flying airplanes in light breezes and warm days when thermals are plentiful. On windy days they are more difficult to control. To fly them, you'll need a small gas motor (.10), electric motor, or a hi-start. Goldberg Gentle Lady is a classic. Great Please Spectra (electric motor), Sprit (no motor) and Goldberg Electra (electric motor) are also good gliders.

## Safety! Safety! Safety!

The time we spend at the flying field is intended to be fun, right? From the time we pull into the parking lot until the time we pack up to leave, the only thing on our minds is to enjoy the time away from our troubles. Nobody likes going out to the field only to be bombarded with a bunch of rules and regulations. And of course, no one likes to be yelled at for doing something wrong. We all want to go about the business of having fun.

Unfortunately, our hobby can be a dangerous one. As flyers, we must all treat the hobby with respect and acknowledge the potential for danger. There are numerous times when what one flyer thinks is safe and acceptable will be totally rejected by other flyers on the flight line. We've all heard and seen what happens when a fellow flyer steps out of line. It isn't a pretty sight.

Truly, no intelligent flyer will intentionally do something to cause an accident. It is only when one flyer or another makes an unintentional mistake that accidents can occur. While beginners bear the brunt of the silliest mistake, even experienced pilots (including myself) have been guilty of unwittingly breaking safety related rules. In the short article, we intend to give several safety related guidelines. We will explain the reasoning behind

each rule so as to enlighten beginners with why we consider them so very important.

### **NEVER turn on your transmitter without pinning your frequency.**

We all know what will happen if someone on your frequency is flying when you turn on your transmitter. There may be times, however, when you are tempted to temporarily turn your transmitter on when setting up or tearing down. Maybe you want to move the throttle setting. Or you just want to run the fuel out of the engine. **NEVER** give in to this temptation. If you do, you may be paying for someone else's broken airplane.

### **Use frequency pins and flags.**

We've seen some of the strangest devices used as frequency pins. Screwdrivers, pens, pencils, and even broken ailerons have made their way into those little holes. While any object that can be seen from a distance will work to pin your frequency, the best frequency pins include your frequency number in LARGE characters so everyone can see them from a distance.

To help other flyers, you should also have your frequency number on your transmitter in large enough characters that a person can see without having to ask. This help each pilot determine who else is on their frequency.

### **Remove your frequency pin each time you finish flying.**

As a courtesy to other flyers, unpin your frequency as soon as you finish flying. You should do this as soon as you impound your transmitter. Especially on crowded days, this keeps people from having to track down pinned frequencies that are not being used.

If you get into the habit of impounding your transmitter and removing your frequency pin every time you finish a flight, you'll never leave the flying field with your frequency pinned. After you leave, if your pin is still in the frequency hole, you will cause another pilot a great deal of grief while they try to figure out who has the frequency pinned.

### **Don't hog the frequency.**

As a courtesy to other flyers, every time you finish a flight, check to make sure that no one else is waiting for your frequency before you fly again. You will notice that there is a slot under each frequency pin hole. If another flyer wishes to fly and the frequency is taken, he will place his pin in the slot, making it very easy for the flyer who currently has the frequency to tell when another person wants to fly.

### **A scenario to avoid.**

Even when the rules are followed, there is still room for mishap. Here is one scenario that has caused an accident. In each case, each pilot could claim that they

were acting properly. Even so, an airplane was lost! This example just goes to show that no set of rules is failsafe, and that there is no substitute for extreme caution.

### **A buddy box blunder.**

Flyer A is flying on channel 22 with a buddy box cord. This flyer has channel 22 pinned. The "slave" transmitter is on channel 54. Both the slave transmitter and the master are properly flagged with their corresponding frequency numbers.

Flyer B wishes to fly on channel 22. He looks at the transmitter stand and sees that channel 22 is pinned. He walks around the pit area to find the other pilot on channel 22. As he approaches Flyer A, he sees the slave transmitter showing channel 54. He doesn't notice the antenna is down or even that there is a buddy box involved.

So Flyer B thinks that Flyer A is on channel 54.

Unable to find a flyer on channel 22, Flyer B assumes that the flyer on channel 22 has left the flying field and forgotten to take his frequency flag. You guess the rest of the story!

In this scenario, BOTH flyers are wrong. Flyer A should have removed the channel 54 frequency flag from the slave transmitter. Flyer B should have been more careful when checking frequencies.

### **Be extra careful!**

This one time when everyone seems to be following the rules when an accident happens. If you've been around the pit area for any length of time, you've probably seen more. As a flyer, you must be VERY careful whenever you turn your transmitter on. If your frequency is pinned and you cannot find the owner of the pin, ask EVERYONE in the pit area. Another possible explanation for your frequency being pinned is that the pilot may have crashed before you and is looking for his plane in the cornfield (possibly with his transmitter still on!)

### **Safety in the pit area.**

Now let's address the matter of being safe in the pit. While most of these rules may seem to be nothing more than common sense, you'd be surprised at the number of pilots who break these rules.

### **Hold on to your plane whenever the engine is running.**

NEVER, repeat NEVER, let go of an airplane with its engine running until it is on the flight line and ready to taxi out. Always keep it under complete control. And always treat an airplane with the engine running as if the radio is going to fail at any moment. We highly recommend the use of hold-down devices that ensure that the airplane cannot move until the flyer is ready to carry it out to the flight line.

### **NEVER taxi in the pit area.**

Along the same lines, when you are ready to bring your airplane out to the flight line, carry it out or push it out by hand. NEVER taxi out to the flight line! In the same manner, after landing, carry your airplane back to the pit area.

### **Never stand in line with the propeller of a running engine.**

A propeller rotating at 10,000 to 20,000 RPM carries a great deal of centrifugal force. The most dangerous position to be in near a running engine is directly in line with the prop. A piece of dirt attached to the prop during a hard landing will usually be thrown from the prop. Or, if the propeller is fractured in any way, an injury could occur if the propeller shatters. ASWAYS stand in front of or behind the airplane.

### **Make needle valve adjustment from behind the airplane.**

Once your engine is running, if adjustments must be made to the needle valve, be sure to get yourself into a convenient and safe position from which to make the adjustments. If you are behind the airplane, you can easily hang onto it with one hand while you adjust the needle valve with the other.

### **Use a glove, chicken stick or electric starter.**

Especially for beginners just getting started with R/C, until you really get to know your engine, exercise extra caution when starting your engine. A flooded engine can really bite you if you use your bare finger to start it.

### **No breaking in new engines.**

As a courtesy to other flyers, NEVER break in an engine in the pit area. If you must do it at the flying field, move down to the end of the pits. From there, the noise in the pits won't be excessive.

### **Safety in the air.**

These rules apply from the time you enter the flight line until the time you carry your airplane back to the pit area.

### **Priorities in flying.**

Here we list the basic right of way for the flying field in the order of most importance:

1. **Dead stick landings** – When an airplane's engine dies, the airplane is going to come down no matter what. The flyer with the dead stick must yell "Dead Stick" immediately. Anyone on the field must know an airplane is coming down in order to get out of its way. A flyer with a dead engine has the highest priority. ALL others must give it the right of way (including any that have already called their landing).
2. **A person on the field** – Whenever a person goes onto the field to retrieve an airplane, they

MUST call (very loudly) "On the field!". This person has the right to safely retrieve the airplane. While ANYONE is on the field, no take-offs, landings or low passes are allowed. The only exception to this rule is a dead stick landing. Once the person re-enters the pit area, they must alert all flyers with the call "Field's clear!"

3. **A flyer calling a landing** – The first flyer who calls a landing has the right to land. Some flyers have tried to hurry their take off to beat the airplane landing. However, if the engine stalls, an airplane will be sitting in the middle of the field while another one lands!
4. **A flyer ready to take off** – Notice that take offs get the lowest priority. At times a flyer may have to wait for several minutes while other pilots land and retrieve their planes.
5. **Never fly over the pits** – Once you're in the air, keep your airplane in front of you. NEVER allow the airplane to fly over the pit area (no matter how high) or over the road or parking lot.
6. **Fly in control** – as beginners, we all need to keep trying new things in order to improve. However, all flyers must fly within their abilities, especially when the field is crowded. Save your new maneuvers for a day when the field is less populated or get an instructor to help.
7. **Call your take-offs and landings** – The more informed you can keep other pilots, the safer flyer you'll be. Someone may have called a landing without your hearing it. If you call your landing loudly, another flyer will be sure to alert you that someone else has already called their landing.
8. **Be sure you know which way everyone else is taking off and landing** – Especially on calm days, flyers have a tendency of taking off in all directions. Watch to be sure you know which way everyone else is taking off and landing. If in doubt, ask!
9. **If you need help, DO NOT FLY BY YOURSELF** – Beginner have a tendency to prematurely think they are ready to fly by themselves. Maybe they have had one or two solos and are feeling pretty brave. NEVER fly by yourself unless you have had your instructor's OK to do so. Keep in mind that your airplane is not the only thing at risk!
10. **When in doubt, ask for help!** – No matter what the rule, if you do not understand what you should do, ask an experienced flyer for help.

### **Conclusion**

By no means do we wish to imply that these are the only considerations related to safety. As stated earlier, it sometimes seems that accidents occur no matter how many safety precautions are taken. However, we have covered the most basic and common dangerous situations. As a novice flyer, you must exercise a great deal of common sense and caution whenever you are at the flying field.