



PRESIDENT TO PRESIDENT

Field Safety and Spring Clean Up

by Dave Brown, AMA President

It's that time of the year again. Finally flying season is here and as club officers, it's our duty to our members to give the field a once-over to look for those safety hazards that are bound to creep up on us.

Obviously we need to check the fences and the grounds for holes into which a person might fall. Look out for any leftover stakes from some previous project. Keep in mind that many of our accidents are of the trip-and-fall type. It is equally important that we look for items that could cause this sort of accident as it is to look for things that might cause or worsen an accident involving a model airplane.

While you are at it, check the various boards to ensure that the correct emergency numbers are posted. Be sure that you have the correct

longitude and latitude of the field posted in case it becomes necessary to call in a life-flight unit. Do you have a map to the nearest hospital? If not, then get that out of mothballs.

One idea that I saw at a club a few years ago was a duplicate set of all of the emergency information including the map on a removable plaque that could be taken with someone transporting an injured person to get help.

While you are considering safety, have you thought of how you would deal with a fire? Believe me, this isn't a threat to take lightly. Fires occur on a regular basis and we need to be prepared to deal with them.

Now that electric models are becoming a large part of our activities, it is not uncommon to have to deal with a fire in an electric model. Do you have the right type of fire extinguishers for this

type of fire? A few buckets of *dry* sand can be a *big* help in dealing with a Li-Poly fire, whether it occurs during charging or after a model crashes and damages the battery. **NEVER PUT WATER ON A LITHIUM FIRE!**

Accidents are not the only thing to be prepared for. Medical emergencies can occur at flying sites. Perhaps it's a sign that we are getting older, but I hear of a number of heart attacks, strokes, and other incidents on AMA club sites each year. And of course, keeping our fingers out of the propellers is not a skill at which we have become adept.

We all hope that all of the preparations we make in this area are never used—if that were the case, we would *all* be quite happy. But I would far rather have spent a number of hours preparing for the emergency that never occurs than running around for a minute and wondering why we hadn't been prepared for the emergency that just happened!

Please fly safely. It's much more enjoyable than the alternative. →

Tech Editor's Note:

Never use a standard fire extinguisher to treat a lithium fire, because they do not work and may substantially increase the hazard. Class D (metal/sand) extinguishers are the only type capable of putting out flammable metals through smothering the fire.

There are a variety of class D extinguishers available, however, for use at flying sites where lithium fires may happen, only two of the types should be used: powdered copper metal or graphite-based powders.

TIPS FOR CLUBS

From the East Valley Aviators, Apache Junction, Arizona

How is a Good Preflight Check Performed?

by Bill Cummings

You might think this is a simple thing to do, but each time I'm at the field, I see mishaps that could have been avoided if the pilot would have only taken the time to make some routine checks. A good preflight check should start before your airplane is assembled. You should go through a meticulous check of all parts of the airplane before assembly, because some very important things cannot be accessed afterwards. Start at the front of the airplane and proceed to the rear.

1. Propeller/Spinner - Check the spinner for cracks, especially around the screw holes. A cracked spinner could come apart when the engine is started and injure you or someone standing close by. Also check the propeller for cracks and nicks. Propellers take a beating. A damaged propeller can be very dangerous if the blades come off at speed.

2. Throttle linkage – Check to make sure that the screws are secure and the pushrod (or cable) is firmly attached and not damaged.

3. Engine mount bolts – Make sure all bolts are present (obvious) and they are tight. Do not forget to check the bolts that hold the motor mount to the firewall!

4. Muffler – Check to make sure the muffler bolts are tight. Also check that the tailpiece is tight and will not rotate.

5. Firewall – Grasp the airplane by the propeller and fuselage, and rock back and forth to make sure the firewall is not loose.

6. Landing gear – Check the wheel collars and axles to make sure they are tight. Spin the wheels to make sure they rotate freely. If you have wheel pants, check that they are secure and tight. Check the landing gear attachment bolts to make sure they are tight.

7. Servos/Linkages – With the wing off (or

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Recommended AMA Flying Site Checklist

No location is totally immune from a liability threat but a little prior planning and a few common sense precautions are all that is necessary to control most exposures.

Occasionally the AMA Club Safety Coordinator will receive suggestions in the form of documents to assist them in their capacity of monitoring various club issues relative to safety and working with club officers. These documents are intended to be used as a guide. These documents are subject to revision based on experience.

We look for input from appointed club safety coordinators.

Take a moment to review the AMA Flight Area Checklist. Take it to the field and inspect the site by going through the list marking appropriate items. Discuss your findings with the club president. Let the club president use this with the board to review and make necessary changes. If your club has more than one site, use a form for each site. These forms do not have to be sent to AMA Headquarters.

Vehicle entry and exit controls

- 1. Are speed limit and traffic control signs posted? __ Yes __ No
- 2. Is the entry point gated and easily recognized both day and night? __ Yes __ No
- 3. Are all hazardous points adequately lit? __ Yes __ No
- 4. Is shrubbery trimmed to provide for good visibility around roads and parking? __ Yes __ No
- 5. Are there "cable-type" fences or barriers utilized? Are they marked and visible? __ Yes __ No

Parking Lot

- 1. Are vehicles parked off the main entry area to eliminate traffic and pedestrian crossing exposures? __ Yes __ No
- 2. Is parking clearly marked, level, with good housekeeping and maintenance? __ Yes __ No
- 3. Is there easy access for handicapped and wheelchairs? __ Yes __ No
- 4. Is there easy entry, exit, and parking for large vehicles with trailers or campers? __ Yes __ No

Pedestrian Traffic and Seating Controls

- 1. Is area clearly marked for pedestrian traffic that leads them to viewing areas? __ Yes __ No
- 2. Seating (i.e. bleachers) inspected to assure stability and safety? __ Yes __ No
- 3. Can traffic be re-routed around this area? __ Yes __ No
- 4. Is the roadway marked to warn vehicles of pedestrian traffic? __ Yes __ No
- 5. Are traffic directors available and trained? __ Yes __ No

Vendors

- 1. Have food vendors been approved or licensed to prepare and sell food? __ Yes __ No
- 2. Are trailer wheels blocked to prevent rolling or wind movement? __ Yes __ No
- 3. Are signs and attachments on trailers fixed to prevent falling or blowing off? __ Yes __ No
- 4. Are canopies and/or tie downs marked with orange strips to prevent trips and falls? __ Yes __ No
- 5. Do you have certificates of insurance from anyone selling food or products on site? __ Yes __ No

Flightline/Pit area controls

- 1. Are sufficient fire extinguisher controls on site? __ Yes __ No
- 2. Do you have enough to adequately put out a fire? __ Yes __ No
- 3. Are fire extinguishers within 100 feet of each other? __ Yes __ No
- 4. Are emergency numbers for ambulance/EMT, Fire or Police posted for anyone to see if needed? __ Yes __ No
- 5. Are frequency controls in place before, during and after flight contests to prevent an accidental interference or takeover of an airplane? __ Yes __ No
- 6. Are areas patrolled to watch for non-flight personnel wandering in? __ Yes __ No
- 7. Are fuel storage, refueling and battery charging areas separated? __ Yes __ No
- 8. Are tents properly tied down to avoid wind damage or blowing over? __ Yes __ No
- 9. Are tie downs marked to prevent trips and falls? __ Yes __ No
- 10. Are barriers in place to protect pilots and assistants? __ Yes __ No
- 11. Are airplanes started pointing away from others on the line? __ Yes __ No

- 12. Are "No Smoking" signs posted in setup and refueling areas? __ Yes __ No
- 13. Is someone in charge of safety in this area whenever flying is active? __ Yes __ No
- 14. Are fliers required to use proper personal protective gear? __ Yes __ No
- 15. Is someone present at all times when charging batteries? __ Yes __ No
- 16. Are batteries charged in a confined area to control explosion or fire? __ Yes __ No
 - 16a) Fire-proof container used for Li-Poly batteries? __ Yes __ No
 - 16b) Sand/water available to extinguish fires? __ Yes __ No
- 17. Is flying area and children's play area separated by at least 200 feet? __ Yes __ No
- 18. Are airplanes controlled as to how many can fly in this area at one time, before, during or after a contest? __ Yes __ No
- 19. In case of losing control of an aircraft, are procedures in place? __ Yes __ No
- 20. Do all pilots know of areas they should not be flying in? __ Yes __ No
- 21. Do hardhats, if required, meet minimum standard? __ Yes __ No

Other areas

- 1. Have surrounding areas been evaluated to prevent accidental airplane crashes in residential or industrial areas? __ Yes __ No
- 2. Are pets under control? __ Yes __ No
- 3. Has the location of the sun been taken into consideration before flying? __ Yes __ No
- 4. Is camping allowed overnight in parking areas? __ Yes __ No
 - If so, have you provided for lighting, trash control, toilets, and camp fires? __ Yes __ No
- 5. Have barriers such as cables or fencing over roads or paths been marked for easy identification so people can see the area is blocked off? __ Yes __ No
- 6. Restroom facilities – regular and handicap accessible? __ Yes __ No

COMMENTS: _____

Name of Inspector(s): _____

Date of Inspection: _____

From Mercer County RC Society, Highstown, New Jersey

Public Ground School

The Mercer County Radio Control Society (MCRCS) and the Mercer County Library System are cooperating to conduct a Radio Control Model Airplane Ground School this spring.

A ground school is something that could be considered for all clubs. An established ground school could be used to recruit more interested aeromodelers.

Ground school could cover everything a new flier would need to know for a successful start in building and flying model airplanes.

Students could learn the theory of model flight, how to choose their first (and second) models, what additional equipment they would need, what it takes to make their models airworthy, how to control their models in the air, and how to ensure the safety of themselves and those around them.

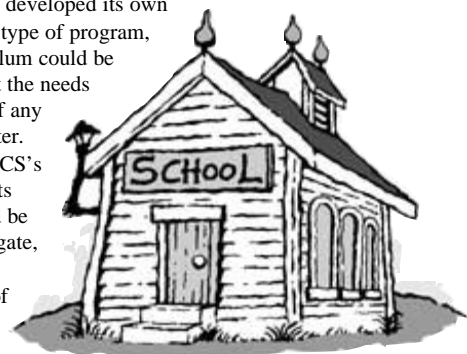
MCRCS established three goals it hopes to accomplish through the ground school program:

1. To raise awareness of radio-control modeling in your community and promote it as a worthy sport.
2. To identify and attract enthusiastic new participants to join your club.
3. To increase attendance at revenue-producing events through free media coverage of the ground school.

MCRCS has developed its own layout for this type of program, but the curriculum could be altered to meet the needs and interests of any particular charter.

Through MCRCS's school, students would see, and be able to investigate, the details of several types of RC aircraft including electric park flyers, Giant Scale military aircraft, World War I biplanes, and ducted-fan jets.

MCRCS has separated its ground school into six-hour classes, conducted in three two-hour sessions, which will include an overview of RC modeling, basic aerodynamics and flight procedures, radio control systems, engines and motors, how to build a model from a kit, and preparation for your first flight. →



Finding Your Center of Gravity

by Skip Wright, author of "Skip's Tips"

This is one of the most overlooked parts of setting up airplanes. In the old days, if the airplane was nose heavy that was the proper CG. That was the old-school way and that's what I was told by pilots who trained me and whom I looked up to. Most of these pilots were in the IMAC and IMAA scene. Also I was trained to balance my airplanes on my fingers and to use weight to balance my airplanes. I was also told to balance the airplane to the CG on the plans or whatever the instruction book has in print...sound familiar?

What I have learned over the years is that these "words of wisdom" might not always be correct and it is possible to improve on them.

Let's break this down. Balancing your model to the plans is a great place to start, but only a start! The model may balance differently from the plans depending on the various equipment you add as well as what is needed for your flying style. So try this the next time you want to balance your airplane, I hope that this will help get the job done!

Once your airplane is balanced to the plans, fly it around the field and adjust the trims. Next, fly the airplane into the wind on a 45-degree up line and perform a half roll.

"Skip's Tips" is sponsored by:



the airplane is inverted, let the stick go on the elevator. If the nose pitches up... its tail heavy. If the nose goes down... the airplane is nose heavy. If the airplane stays straight... the CG is dead on.

When you balance your airplanes, you should try to use some type of CG machine. If you have used the finger method, I can promise you can do a "better job for the airplane" and chances are you could be balanced incorrectly.

There are different ways of balancing the different type of aircraft models:

- If it's a high wing or trainer... balance the airplane upright on the bottom of the wing.
- If the airplane is a mid wing or lower mounted wing, balance the airplane upside down.
- Use the battery to help with the CG by moving the battery forward or aft before adding extra weights.
- Balance your airplane left and right as well as fore and aft. This is done by hanging the airplane on the

thrustline at the points forward and aft on the fuselage to obtain the wings to be level. Again, equipment placement before adding weight.

The goal: balanced airplanes. They fly safe. You will be able to fly the airplane in any direction, whether upright or inverted. Landings are easier, and less damage from any landing is always a good thing! The model's settings should not have to be done with major trim and you should not have to put any pressure on the stick to keep it level. All your trims on the radio should be centered. If you are flying around and your trims are not centered something is not set up correctly. This leads to flight problems and unsafe aircraft. →

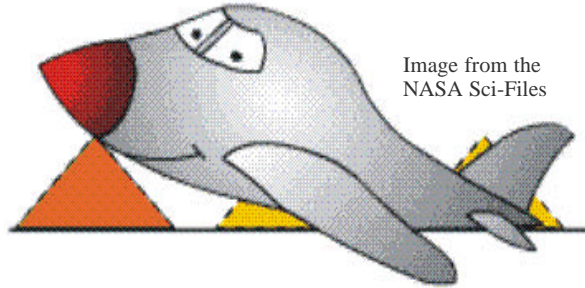


Image from the NASA Sci-Files

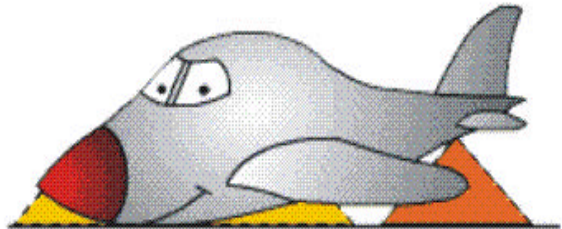
This airplane isn't balanced, so that's not the center of gravity.

From Sierra Flyers Model Airplane Club, Yuba City, California

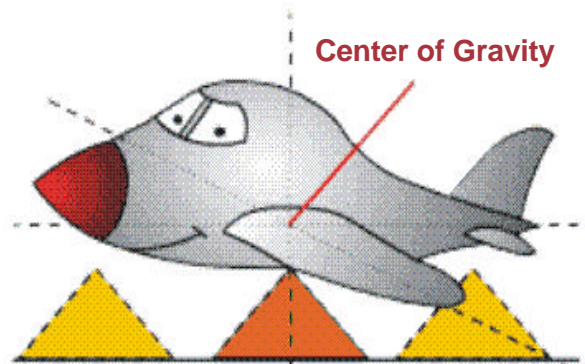
Remember When...



1. A PROGRAM was a TV show.
2. A CURSOR used profanity.
3. A KEYBOARD was a piano.
4. MEMORY was something that you lost with age.
5. A CD was an investment.
6. COMPRESS was something that you did with the garbage.
7. LOG ON was adding wood to the fire.
8. HARD DRIVE was a long trip on the road.
9. A MOUSE PAD was where a mouse lived.
10. And a BACKUP was a sewer problem.
11. You CUT with a pocket knife, and PASTED with glue.
12. A WEB was a spider's home, and a VIRUS was the flu.
13. A COMPUTER was something in a science-fiction show.
14. A WINDOW was something you hated to clean.



This airplane isn't balanced, so that's not the center of gravity.



This airplane is balanced at its center of gravity.

Painting with MonoKote or UltraCote

by Bob Frey

I've been experimenting for the last couple years with various techniques to help add realism to an iron on MonoKote or similar finish. There has been some degree of success, so I thought I would make a step-by-step list of the procedure. This sounds like a lot of work, but it's still much easier than glassing, sanding, priming, sanding, and then painting.

Here's the step-by-step procedure I used for the wing shown in the picture.

1. Tighten up the UltraCote nice and tight. I use a heat gun and a soft cloth to rub it down after blowing over it. I usually seal any bare wood/UltraCote edges with thin cap, like around the wing root rib.

2. Now rub the whole wing with a medium (brown) Scotch-Brite so the paint will have some adhesion. No need to rub hard or long. Just so you know, I tested painting MonoKote without this step and still had good adhesion without pulling up paint with the tape.

3. Now lay out all the panel lines. I usually use a fine-line, black Sharpie pen. Once this is done, lay the graphics tape down over that. This is $\frac{1}{64}$ and $\frac{1}{32}$ Letraset graphics tape. Chartpak makes it, too. Put this down right over the lines you scribed with the Sharpie. I use the $\frac{1}{64}$ tape for regular panel lines, and the $\frac{1}{32}$ for panels that are opened frequently like gun bays and ammo bays, or anything that appears a bit more visible on your three-view.

4. Access panels. I use MonoKote trim sheet material to make these, the stuff that is sticky backed. But there are a variety of different materials you can use, particularly if you are painting the model. Add these now.

5. Now rub everything down with denatured alcohol. This will clean the surface for paint and also get rid of any mess ups you may have made with the Sharpie.

6. Now you can spray the whole wing with the Krylon Chrome Aluminum. I hit it with a tack rag just before I spray it. I use one fairly light coat—just enough to pretty much cover it, followed by a heavier final coat about five minutes later. It goes on and covers great and will be dry in about 15 minutes.

7. After it's been drying for about 10 minutes, get a good, sharp Exacto knife and, start peeling

up the graphic panel line tapes. It might work okay after it's dried longer, but I've never tried that. Once the tape is pulled off and the paint has dried, you'll have a little ridged panel line, which you should be able to feel, where the tape was. The black from the Sharpie will show where the tape was, which gives a little desirable contrast too.

8. I usually wait a couple hours before this step. Get some blue, low-tack painters' masking tape. I get mine at Ace Hardware. Lay that along the edge of the panel lines so that you have a single panel surrounded. Then rub the panel with Scotch-Brite in one direction. You will only need to make a few passes, just enough to make it look even.

There are three grades of Scotch-Brite available at Ace Hardware: green (high abrasive), brown (medium abrasive), and white (low abrasive). Use these varieties to arbitrarily rub the panels in different directions. Some I leave alone. You can also use steel wool, but I haven't had too much luck with fine sandpaper. Surround each panel with masking tape as you go.

I use the same pieces of masking tape repeatedly. You don't have to get it perfectly sealed or exactly on the panel line. It's just there to avoid your rubbing from going over into the next panel. Sounds like a lot of masking, but it actually goes fast, and is much better than trying to carefully rub up against the panel line without going over it. That would ruin the panel line, and perhaps leave wrong-way scratches in the adjoining panel.

9. Now you can lay out any markings, in your case invasion stripes with your Sharpie. In my case it was just black stripes. I'd do the whole area in white first. Mask with the blue, low-tack tape and newspapers. Before you paint, go over the panel lines with your Sharpie again and lay down the $\frac{1}{64}$ or $\frac{1}{32}$ graphic tape. Once it's down, rub very gently with denatured alcohol. The alcohol will get to the Krylon if you rub too hard. Now spray with the white Krylon.

They make a semi-flat that is nice, but any sheen will do since you're going to clear coat everything in the end anyway. Use the same routine on number of coats and drying time, and on removing the graphics tape.

10. Now do the same thing with the black invasion stripes. But this time, once you've got them masked, go over the panel lines with a silver Sharpie pen. Unfortunately, they don't make a fine-line silver pen as far as I can tell, but it doesn't matter since you again put the graphic tape down over that, and whatever isn't under the tape will get painted.

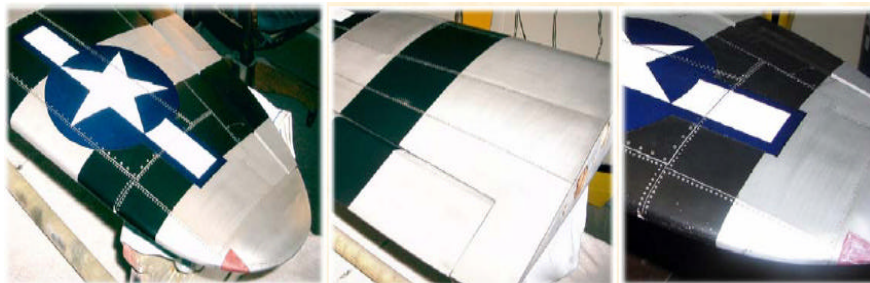
11. Spray the black now, again with Krylon and again pull the graphic tape up starting about ten minutes into the drying time. If you did everything right the panel lines should show up clearly on the whole wing and you should be able to feel them too. So far I've had zero problems with the blue, low-tack tape pulling any of the Krylon up. Just go slowly and pull the tape back over itself when removing it. I even used some regular white masking tape in a couple of areas with no problem.

12. Stars and Bars. The ones that come on the airplane are terrible. On the one I'm doing now, I'm using a set made for the Yellow P-47. For Little Chief, I ordered a set of TopFlite, Giant Scale P-51 decals, and they're pretty good. You need to sand down the panel lines you made where the decals go. I assume you know about putting these on wet with Windex so you can locate them better and then smooth them out. Once they're down good, scribe the panel lines; dark areas with the silver Sharpie and white areas with black. Don't put the graphic tape on until just before your clear coat.

13. Now it's time for rivets. You can do as many or as few as you like. I've been putting a medium number on these models, probably about $\frac{1}{4}$ or $\frac{1}{3}$ of the amount you might find on a Masters-quality model, but certainly enough to be very visible and present.

First scribe all of the rivets you want with the trusty fine-line Sharpie. TopFlite makes a rivet stencil, and that's what I use to lay them out and keep them even. Over black or dark painted areas, use the silver Sharpie, but just put a 'dot' in the middle of the stencil holes. Don't try to make a circle in them like you are able to do with the fine-line black.

14. Assuming you have made the brass-tubing tools for making rivets, load the appropriate size into the MonoKote Trim Seal tool. The $\frac{3}{16}$ brass tubing fits the tool chuck, and you telescope down from there with tubing to the



please see **Painting...** on page 8

Save that stamp!

If your club newsletter is sent to AMA electronically there is no need to send a hard copy.

E-mail your newsletter to lhelms@modelaircraft.org

Preflight Check...continued from page 1

through an access cover) check each servo to make sure the attachment screws are in place and tight. Check each control-rod linkage to make sure it is firmly attached and bolts, screws, and connectors are tight. While in this area, check any wire connections you have access to such as battery, switch, etc.

You should also check wing-attachment points to make sure they are solid and tight.

8. Check the batteries with a load test-type checker. The batteries must remain in the safe zone even under load. If they do not, recharge before you fly. Make sure the load test meter is the proper type for the kind and number of cells you are testing. If you have mixed batteries in your airplane (for example a Lithium Ion on the receiver and NiMH on the ignition) it is a good idea to put a note on the charge jack as to type and size as a reminder for both charging and testing.

9. Horizontal stabilizer – Grasp and pull on the stabilizer to make sure it is attached solidly. Pull on the elevator (both halves) to make sure the hinges are tight. Check the control horn and the control rod to make sure they are attached solidly. Also check that you have a “safety device” (i.e. piece of fuel line) to make sure the linkage cannot come loose from the control horn. If you use flying wires, check to make sure they are tight.

10. Vertical stabilizer – Grasp and pull on the fin to make sure it is attached securely. Pull on the rudder to make sure the hinges are tight. Check the control horn and the control rod to make sure they are attached solidly. Also check that you have a “safety device” (i.e. piece of fuel line) to make sure the linkage cannot come loose from the control horn.

11. Antenna – If your antenna is accessible, check it for nicks or breaks.

12. Wing – Check the wing for obvious damage such as tears in the covering, broken ribs, etc. Grasp and pull on each aileron and flap to make sure the hinges are tight. Check each control horn to make sure

they are tight and the control rods are attached solidly. Make sure you have a “safety device” (fuel line) on each clevis to ensure they cannot come loose during flight. Check wing bolts or any other means used to attach the wing.

Now attach the wing, and check to make sure the bolts have the correct torque to hold the wing solidly.

13. Check controls - Once the wing is in place, turn on the radio and, with the antenna collapsed, check all controls for ease of movement and correct direction of travel.

14. If this will be the first flight on the airplane, verify that the Center of Gravity (CG) is within the safe range. If you are unaware of what that range is, it is usually safe to test fly at 25% of the chord of the wing from the leading edge. That should leave the airplane a little nose heavy, which is a safe way to test fly. Remember: A nose-heavy airplane flies poorly – A tail-heavy airplane fly’s ONCE!

15. Range check, engine off - With the antenna still collapsed, walk about 60 to 80 feet away while moving the controls. There should be no interruption or chattering from the servos. It is helpful to have someone stand near the airplane to listen for chattering.

16. Range check, Engine running –MAKE SURE YOUR AIRPLANE IS RESTRAINED BEFORE STARTING THE ENGINE! Start the engine, and with it running and the antenna collapsed, walk around the airplane checking controls. This should be done at idle and at full throttle. I know some of you will look at this list and say, “If I do all that before each day of flying, I will not have time to fly!” In fact, if you make this checklist a part of your “routine” every time you put an airplane together, after a while you will find it will only take a few minutes to complete. →



Tips & Tricks

Keep Your Pilot in Your Plane

Have you ever seen someone’s pilot-figure rolling around in the canopy? Not very cool especially if the pilot is an F-15 figure. Try this idea to make sure your pilot doesn’t eject too soon.

Since most pilot figures are hollow, enlarge the rubber hole in the bottom of your figure. Make it about ¼-inch to ⅜-inch wide. Go down to your favorite hardware store and purchase some drywall hole-hanger screws.

Get the ½-inch or ¾-inch thick size. The size to use will depend on your cockpit size and the thickness of your pilot’s rubber base.

Now drill a hole into the cockpit floor (where your pilot will sit). The cockpit hole needs to line up with the hole in the bottom of your figure.

Now glue your pilot down and take the drywall screw and push it up through the bottom of the cockpit floor.

Put the base of your figure on top of the drywall screw and tighten the screw. As the screw is tightened, the casing’s external fingers will collapse or spread out inside your figure securely attaching your pilot to the cockpit floor.

Now if your airplane crashes, at least you know your pilot will still be securely attached!

—Hangar Talk, Edinburg, Indiana

Helpful Ideas

With the weather becoming gloomier, and colder, some of our attention has turned to building and repairs—and hopefully more of the building and less repairs. Here are a few tips:

The foam “Pool Noodles” sold in the sporting goods section of mega marts make great foam stock for mounting your batteries and receiver in your airplane. It cuts very easily with a kitchen knife, and a pocket can be easily formed that will protect the electronics from vibration and shock. It is also rigid enough to hold the devices in place in many applications.

Aluminum foil makes a great shield or mask when spray painting. Paint of course does not penetrate the foil; it can be easily formed, and will stay where you put it, often without the need of tape.

Store your unmounted engine in an aluminum foil pouch. Thoroughly clean the engine and spray penetrating oil as a preservative and wrap the engine with the foil.

Crease the edges to form an airtight seal to keep the preservative oil in, and the dirt and moisture out.

—From Ed Olszewski, Eagles’ Nest, St. Clair County, Michigan

Cleaning Pushrod Tubes

The oily residue of model fuel sometimes makes its way into the pushrod tubes, which also captures small particles of grit. The oily residue also makes some of the flexible plastic pushrods and tubes swell and soften slightly, which makes operation in curves almost impossible.

A simple cure is to apply a solution of powdered graphite, mixed with mentholated spirits or rubbing alcohol. Holding the model in an appropriate position (thus having one end of the errant tube in an upright position), apply the solution with a syringe onto the rod (or it can be applied to the mouth of the tube while moving the rod in a back and forth motion) to encourage the solution to circulate.

The mentholated spirits, or alcohol, washes away the oily residue and grit, leaving the graphite behind providing a good lubrication to the pushrod.

—From San Gabriel Valley Radio Control League, South El Monte, California

Appreciating Modern RC Scale

by Russell Knetzger

Scale aeromodeling competition, as practiced in the United States since the mid-1970s, has revived Scale. Prior to the Academy of Model Aeronautics adopting the “stand-off scale” concept, Scale was declining. The decline was because Fédération Aéronautique Internationale (FAI) worldwide rules were so exacting. Models, to be FAI competitive, need 1,000-2,000 hours of building time. Two earners per U.S. family were becoming common in the 1970s, leaving less time for adult hobbies.

The AMA system divides the 100 possible static points: 40 for accuracy of outline, 30 for finish, color and markings, and 30 for craftsmanship. Judges must decide points strictly based upon the scale documentation provided by the pilot, and that is limited to only a few sheets so judges are not overwhelmed. The finish, color, and markings sheet(s) show degree of gloss, position, size, and color of insignia and other markings, and overall paint scheme. The outline sheet(s) give top, bottom, side, and front views of an aircraft. These four sides are called “three-views.”

Now called Sport Scale, the “stand-off”

rules keep judges 15 feet away from the model during “static judging.” AMA rules award half of a pilot’s points for how faithfully the model replicates the prototype (the static aspect), and half for a pilot’s flying skills. That greater static distance (FAI judges can come as close as they like and peer into the cockpit) means modelers can build with less detail. Ironically, with each passing year U.S. builders are becoming more detailed, even in the low-points cockpit area.

The 100 points AMA assigns for flying skills are divided into 10 points to each of nine flying maneuvers, plus 10 points for overall realism of flight. Mandatory maneuvers include takeoff, landing, low fly-by, and horizontal Figure 8. Optional flying maneuvers must be prototypical of the modeled aircraft. Judges deduct for maneuvers that are off center, not parallel to the runway, too high, too far out, too close, not level, and for realism, too fast, too jerky, etc.

Refinements to these basic concepts, which have further attracted modelers to Scale, include Team Scale and Fun Scale. Team Scale allows the builder, who may not be a good pilot, to team with a better pilot. One does the

building, one does the flying. Fun Scale attracts beginners. The documentation requirements are simplified because obtaining documentation is always a challenge.

Almost-Ready-to-Fly models (ARFs) are also being provided for in Scale competition. The modeler is encouraged to improve the detail of the ARF, such as drawing or scribing in panel lines, added lettering, decal markings, etc. Again, finding documentation to match a manufactured model can be difficult. The shipping box cover art may be all that is available.

A surprising impetus back to Scale modeling has also come from an anti-competitive source, the International Miniature Aircraft Association (IMAA), which formed roughly 25 years ago for two purposes. One was to promote Giant Scale modeling, and the other to switch from competition as a reason for gathering, to the fly-in approach: “display, see, and be seen.” Fly if possible, but not required. Since larger aircraft naturally fly more realistically, the serious Scale competitors are building large: 10- to 12-foot spans, 25- to 50 pounds. →

From the Valley City RC Club, Medina, Ohio

Three Preventable Sins of RC Flying

by Jim Procise

One thing that amazes me about this hobby is how often we crash. On any given weekend, one or two members will probably lose an airplane. What’s even more amazing is that the vast majority of these crashes are entirely preventable.

Most crashes are caused by simple errors that we make before the airplane leaves the ground. Eliminate these errors and you’ll have a far better chance of bringing the model home in one piece. Here are the three most common mistakes that lead to crashes and simple steps to avoid them.

Wrong Model Number

Programmable radios make the sport more fun and arguably safer too. One of the primary benefits of a programmable radio is that it can store settings for several models. With a click of a button, you can call up the setting for the model you’re about to fly, complete with trim settings, servo end-point adjustments, servo rotation directions, dual rates, exponentials, and more.

But programmable radios have a dark side. If you fail to select the right model before takeoff, you may find yourself flying with reversed ailerons, a reversed elevator, a reserved rudder and/or steering, improper trims or throws, or other ailments. Rare is the airplane that lands safely when the radio is

set to the wrong model.

The solution is twofold. One, remember to check the model selected the moment you turn on your transmitter and make sure it matches the airplane you are about to fly. Two, always check the movement of the control surfaces before flying. Even if you forget to check the model selected, you’ll almost always catch the error if you check the control surfaces before flight.

Having a radio set to the wrong model is the most common cause of reversed servos, but it’s not the only cause. Occasionally we simply forget to program the servo directions before flying a new airplane. Again, make it a habit to check the movement of the control surfaces before every flight and you’ll head off disasters before they happen.

Improperly Located Center of Gravity

Balance is important in full-scale airplanes, but it is even more important in RC aircraft, where fractions of an inch or so can make the difference between a model that flies well and one that is unmanageable in the air. Most construction manuals or plans specify where the model’s center of gravity (CG) should be located, and a model shouldn’t be considered complete until you’ve ensured that the recommended CG is at or very near the recommended location. If

necessary, add lead weight to the nose or tail to achieve the recommended CG. Often, instead of adding weight, achieving the desired CG can be accomplished by moving the receiver battery forward or backward. Always check the CG with an empty fuel tank. If your airplane has retract that fold backward (like the F4U Corsair), check the CG with the wheels up. Deploying the gear prior to landing will move the CG forward, but it’s better to be nose-heavy during landing than tail-heavy during flight.

Inadequately Charged Batteries

If you crave excitement, try flying your favorite airplane without charging the receiver battery. To double the fun, don’t charge the transmitter battery, either. Then you can take bets on which will fail first. Joking aside, charge those batteries before flying, and check them at the field if you are not sure whether they are charged.

Most transmitters have built-in volt meters; don’t fly if the voltage is less than 10 volts—just to be safe. You can check receiver batteries with an inexpensive expanded scale voltmeter (which should be a part of every flight box). Remember, low batteries lead to crashed airplanes. This is one case where an ounce of prevention is worth a pound of cure. →

size you want. I wound up with several sizes and one or two that has a screw-slot maker soldered to the $\frac{3}{16}$ chuck piece. You have to run the tool on low, or risk the chance of melting the solder in the bits that you made.

15. To make a perfect rivet, you need a guide. What I use is an old sprocket about 3 inches in diameter that has convenient size teeth for guiding the tip of the MonoKote tool. The one I have is steel and quite heavy and this is a plus. Something similar will do as long as you can put it down on the surface to guide you. No need to push hard, but you need to be square with the surface, and I usually give it a little twist before pulling away.

Pressure will need to be adjusted slightly depending on whether the balsa underneath is soft or hard. A little experimenting will help and before you know it, you'll be running off a long line of rivets in a minute or two. Treat the decals just like anything else. On areas where you're going over fiberglass, it's better to use a regular 30 or 40-watt straight-tip soldering iron, with the brass-tubing wheel collared on the tip. The trim sealing tool just isn't hot enough, but basically the same procedure. I use larger rivets around the gun bays and access panels, and along the trail edge, etc. Use your artistic imagination. On some of the larger ones you can go back and put screw slots in them.

16. You're basically at the point I am on the wing I'm working on. At this point, I would ding up the lead edge by spattering some thinned, black paint from the front to replicate stone bruises on the aluminum and white areas, and silver on the black stripes. Do this by loading a brush with the thinned paint, and whisking your finger across it while holding it near the lead edge. A little experimenting here is in order. Stone bruises are much more predominant near the root of the wing and tapered down to nothing toward the tips. The

stabilizer and fin have this effect too. You can use most any kind of paint for this, as long as it will hold up until you clear coat.

Once that is done, I'd add the machine guns and pilot. Lots of P-47 pictures show black machine guns, but I assure you all the blast tubes were silver. I also add oil leaks and smoke smudges here and there, but you need an airbrush for that. For oil leaks, I load up a brush with well-thinned, black paint and put a dot at the origin spot of the leak, then quickly blow it with the airbrush in the direction I want the oil to run. Usually it's down and back on the fuse, and just back on the wings.

It's wise to use a little piece of masking tape along the panel to keep it from accidentally going the wrong way. Gun smoke smudges are just done lightly with the airbrush and thinned paint. I also add some smudging aft of the hinge access panels on the ailerons and flaps with the airbrush. The oil leaks and smudging need to be painted very conservatively. Less is more so to speak.

Once all of the details are done you can clear coat the whole thing. I highly recommend the Klass Kote epoxy, but it does need to shoot with at least a trim spray gun. I recommend it because it seems to really stabilize the covering so it resists wrinkling a great deal. Also it is absolutely fuel proof if you intend to run a glow engine. A nice touch would be to go back and mask off the aluminum and shoot all the markings with dead flat, but of course that's a lot more work.

Now I know this sounds like a lot of work, but I think if I really went after it, I could do all of this to one wing panel in one day. That includes rivets, but probably not clear coating. My problem is I take too many breaks. I also understand that I wouldn't really need to refer to instructions and that does take time too. But after a while, and you get the hang of it, things go pretty fast. Good luck. →

From Roxbury Area Model Airplane Club, Lake Hopatcong, New Jersey

Top Ten Reasons Why It's Not So Bad to Crash Your Airplane

10. If there are people in the club who are wondering why you haven't done it recently, they will finally be "off your case."

9. You get everyone's attention for a few seconds.

8. You get some people's sympathy for second or two.

7. Certain club members run to get their camera to take pictures of the wreckage.

6. You don't have to fold the back seat down in your car to get your airplane in on the way home.

5. Your spare parts collection just got bigger.

4. You now have more room at home for your next airplane.

3. You now have room on your transmitter for your next airplane (if you were maxed out).

2. You will never have to bring that airplane to the club auction.

1. You don't have to fly that airplane anymore.



From Aero R/C Club, Lennon, Michigan

Are You Infected?



If you can answer yes to more than five of these questions, then you may have a serious infection called RC Hobbypox.

- I need another radio (add a yes for every radio over five).
- I have more than one large box of scrap balsa.
- I save pieces of MonoKote that are as small as a square inch.
- I keep broken propellers.
- \$200 for a four-cycle engine is worth it because it sounds twice as good as a two cycle.
- I have more than three airworthy airplanes.
- I have parts to airplanes that are not functional and never will be.
- I need a more powerful engine.
- I have considered buying a new vehicle so I could buy larger airplanes.
- I recognize my spouse and children less than two out of three times. Two yes responses if you just noticed that they left at the start of last flying season.
- I have snow skis for my airplanes.
- I wish twin-rotor helicopters were more of a challenge.
- I can guess the RPM of an engine within five revolutions.
- I have a still in my basement, but only to make fuel.
- I have never noticed the model holding the model airplane in advertisements.
- I have deliberately crashed an airplane so I would have an excuse to buy a better model.
- I bought a DVD player just to watch model airplane videos.
- I visit hobby shops when on vacation instead of going to the beach.



RC Webmasters Goes Online!

RCWebMasters.com went online February 4, 2007. This new site is a free resource dedicated to supporting RC club webmasters. A variety of tools, utilities and packages are available to assist in the operation of a club Web site. The centerpiece of the offering is a discussion forum dedicated to helping new webmasters get up and running as well as serving as a vehicle for more seasoned webmasters to help others.

RCWebMasters.com was designed with the entire modeling culture in mind. Site administrator, Rick Curtis, explains: "While there are tons of resources available on the Internet to assist webmasters, none (to our knowledge) have a focus on the RC club Web site and webmaster. We believe we are the first to focus on this niche. Our modeling hobby has developed a great culture that we would like to see carried forward with this Web site. It is not uncommon to hear some really good information exchanged at the field or at a club meeting when someone asks for help with a model. There is a true feeling of camaraderie in most clubs. We want to create a community of club webmasters to do exactly the same thing with Web site help and information."

RCWebMasters.com is open to all club webmasters or for anyone associated with the operation of a club Web site: <http://www.rcwebmasters.com> →

AMA Vision

We, the members of the Academy of Model Aeronautics, are the pathway to the future of aeromodeling and are committed to making modeling the foremost sport/hobby in the world.

This vision is accomplished through:

- Affiliation with its valued associates, the modeling industry and governments;
- A process of continuous improvement;
- A commitment to leadership, quality, education and scientific/technical development; and,
- A safe, secure, enjoyable modeling environment.

AMA Mission

The Academy of Model Aeronautics is a world-class association of modelers organized for the purpose of promotion, development, education, advancement, and safeguard of modeling activities. The Academy provides leadership, organization, competition, communication, protection, representation, recognition, education and scientific/technical development to modelers.

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The Academy of Model Aeronautics' *AMA INSIDER* is published electronically on a bimonthly basis for members of the Academy of Model Aeronautics. Its purpose is to create a network of information exchange between the Academy of Model Aeronautics-chartered clubs as well as the Academy of Model Aeronautics officials and chartered clubs.

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