



HI-SKY R/C FLYER

November 2007

Volume 36 Issue 11

President: Bruce Hoover
Vice President: Tommy Thomas
AMA Charter Club #851

Treasurer: Ed Anderson
Secretary: Ralph Gillette
www.hiskyrc.com

Meeting:

The November meeting will be held November 6, 2007 in the First Baptist Church Activity Building at the corner of Garfield and Louisiana streets. The meeting will start at 7:00 PM.

AMA dues

By now you should have your statement for your AMA dues for 2008.

HI SKY R/C Club Minutes: October 2, 2007

Meeting was held at the First Baptist Church.

Bruce Hoover brought the meeting to order at 7:00 PM. There were 14 members present and two guests, Chris Rutter and Josue' Arrambide.

Minutes: Gene Laughlin moved and Mike Chase seconded that the September minutes be approved as published. Motion passed.

Field Report: Bruce reports the field looks real good.

Safety Report: A.J. Lee says everything has been safe and everyone is watching what they do.

Activities: Need to start talking in November about what we want to do next year. We will make the final

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Picked up Passing by

Safety, or just too many foolish rules?
By Henry Smith

The subject of safety has been brought up again. I have to admit that sometimes I think a rule is foolish. But then I remember the times I got "bit" by not reading the directions, by taking shortcuts, and a host of other transgressions. I then think about the possibilities for personal injury to others and I know the rule is for everyone's safety. I will use the example of the Hi-Sky club's rule about carrying or holding and guiding the plane to the safety fence. I know this may be a handful for some people. But what could happen if that person who was taxiing his plane tripped and fell. The throttle could go from idle to wide open and we can only guess where the other sticks would go. A person flying wouldn't be aware of the hazard in time to get out of harms way.

I won't list all of the AMA's Safety Code or the Hi-Sky club's safety rules. You can find the AMA Safety Code on the AMA website. Our club safety rules and The AMA Safety Code are posted at the flying field.

These rules are for our protection and any spectator's protection. As Murphy's law states, "If it can go wrong, it will at the worst possible time". I have seen new servos that failed on the first flight, a new receiver that failed, and a battery pack with a bad solder joint that caused a crash. This has been over several years and is not to be expected. But it can happen. This is why we are advised not to fly over or towards spectators.

These same things can and do happen with "time tested" equipment. Receivers can develop problems caused by hard landings as well as a crash. Servos can stop working and batteries can develop problems. We are advised to perform a range check to insure all functions are working prior to flying. This can show up a few problems such as servos not working or reversed for some reason if you have a computer radio.

Our pilots respect the safety rules and abide by

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From the Robbins Nest:

Electric Motor mounts

By Dennis Robbins

If you fly light indoor electric airplanes, one thing is for certain, you will have to mount your electric motor, while keeping the plane as light as possible. Using numerous photos, I will illustrate a technique that has worked well for me, while keeping the weight of the mount to a bare minimum.

Note: The 6mm foam backing serves two purposes. It covers the motor mounting screws, which prevents them from puncturing the battery, in case of a crash. The foam also can be replaced easily if the motor becomes separated in one of those “hard landings”.

Please keep in mind that the overall weight of my plane is only 4-5 ounces, and the motor produces very little torque, so the stress on this mount is reduced. You will need to determine for yourself if this type mount is sufficient for your plane, and what additional bracing may be needed to support the motor you plan to use. Obviously, the mount would not work well with larger and heavier planes.



Using a stable small table, I cut 1/8" light ply into 1.5" x 1.5" sq.



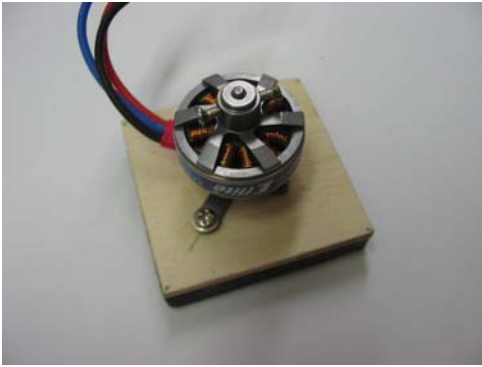
I also cut a 6mm thick piece of foam the same size.



The 6mm foam is glued to the light ply.



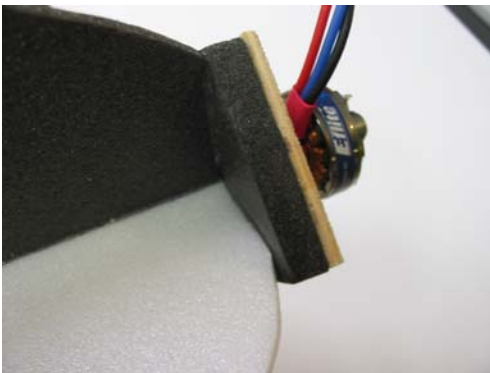
The mount is marked and drilled for the motor.



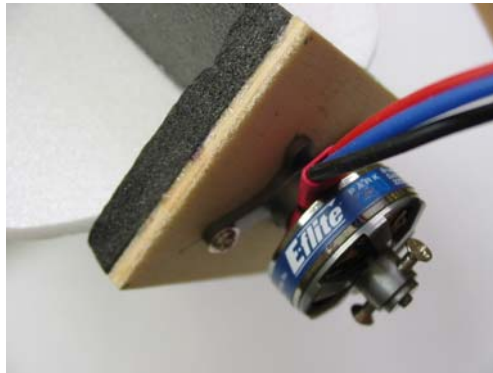
The motor is mounted to the ply, and is ready to be glued to the front of an airplane.



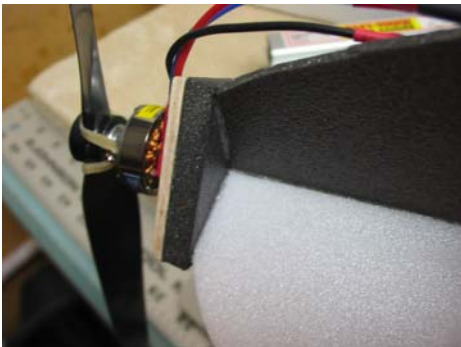
The foam is glued directly to the plane. In this particular installation, the nose was recessed to accept the foam/ply mount.



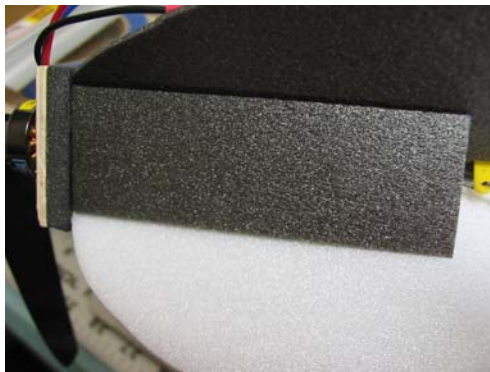
In this photo, you can see that the mount was glued directly to the nose of the plane.



This is a different view of the same mount.



Here is an additional view of the mount, glued directly to the front of the plane.



If extra bracing is desired, you can glue foam strips on all four sides. This will add an amazing amount of strength to the nose of the airplane.

decisions on the activities at the December meeting.

Electric Fly – Dennis Robbins got the rate schedule for the Horseshoe. He hasn't had a chance to talk to anybody yet about move in and move out and the other details. Talked about maybe having a one-day flying session at the CAF for locals only. More discussion next month.

The Hog fly went well. 12 flyers. Didn't have any problems, not even a broken prop. Only a couple of wheels came off on take off or landing.

Old Business: Odessa club has fuel and will sell it to us.

New Business: Gene Laughlin reported that there has been some flying in the parking lot at Grande Stadium. This is a Class "C" demeanor. Jim Ruple has talked to the police department, parks and recreation and the FAA, but got no action. Jim Ruple made a motion and Gene Laughlin seconded that we have Ed Anderson look up the codes and draft a letter to Midland city police and the municipal court, citing the laws being violated. Motion approved. The worry is that someone will get hurt and the city and county will ban flying altogether, which would put us out of business.

Josue' Arrambide is chairman for the First Baptist Church second annual car show on October 20th. He has asked the Hi Sky club if we would be an attraction during the show, with a static display and flying electric planes in the Fellowship hall. Jim Ruple, Dennis Robbins and a couple other members checked out the space and think there is enough room to fly. A special memo will be e-mailed to all the members concerning this activity.

Treasurers Report: Ed Anderson was not at the meeting, but gave Bruce Hoover the info that he has moved \$XXXX into a CD to get the higher interest rate. We do have money in the bank.

Show and Tell: No show and tell.

Club Raffle: No raffle.

Next meeting: At the Baptist Church, 7:00PM November 6th.

Meeting adjourned at 8:00 PM.

Tips & Tricks

From Jim's RC.com

Removing Covering from Balsa Sheeting

Removing covering from balsa sheeting can be tricky. If you cut too deeply, you can compromise the wood's integrity. By placing the blade in the knife handle as shown in the photo, you can easily adjust

and control the depth of the cut. To set the blade's depth, use it on a scrap piece of sheeting and make test cuts before you make the actual cuts on the model.



Cheaper Small-Parts Storage

Here is a suggestion for easy storage of small screws and bits. All you need is an ice cube tray. The advantage of this idea is that ice cube trays can be bought at low prices unlike professional parts organizers.

Efficient, Glow-plug Igniter Cleaner

Oil residue can prevent glow igniters from working properly. If you carry yours in your pocket, even the lint in there can cause your igniter to malfunction. A good way to clean igniters is with alcohol and an old electric toothbrush. A clean tip on the igniter will allow more current to reach the glow-plug element for more reliable starting.

Clear Canopy Polish

Here is a good canopy polish tip, use toothpaste on the canopy. Smear a liberal amount of toothpaste on the canopy and use toilet tissue to buff the canopy to a glossy finish that will not scratch at all. Then use alcohol cleaner to remove any residue left by the toothpaste. It works very well!

CALENDAR OF EVENTS

We have no events planned for the rest of the year. Be at the club meeting November 6, 2007 to make make your ideas heard.

The responsibility of parents is to raise children who do not need parents. Bob Keeshan/Captian Kangaroo

What do you think it is that drives people to want far more than they could ever use or need? I frankly think it's insecurity. How do we let the world know that the trappings of this life are not the things that are ultimately important for being accepted?

Fred Rogers (Mr. Rogers' Neighborhood)

them. There are a few people who think the rules are too restrictive and refuse to obey them. What can happen if the safety rules are not observed? On the one hand, nothing. But if there is a crash, injury to spectators may occur. Damage to property may occur and the bad community relations that may follow. To quote our District VIII Safety Coordinator; "Anytime you fly a model aircraft, you must accept responsibility for your actions. That means flying by the accepted safety rules." Fly safe and have fun.

I didn't get to attend the car show at First Baptist Church. But, from what I have heard our club was well represented. We had some flyers and others who helped. I am sure that the car show organizers appreciate our support.

Do You Have an Itch to Scratch? Part II

By Bill Bowne

From the Transmitter, Burlington County, New Jersey

Okay, so you want to go whole hog and roll your own. First, you need to decide if you're going to do a Scale or sport model. For a Scale aircraft, you have to approximate the shape of the full-scale design. How closely you duplicate it is your decision. Of course, if it isn't Scale, you have a lot more leeway.

Everybody will find something wrong with the outlines, colors, or markings on a Scale model of a P-51, but nobody can find them on an Ugly Stik! Besides, designing your own sport model is good practice for drawing up that dream Scale model. So, this episode, we're going to talk about sport airplanes.

First, though, let's get a few definitions out of the way. I'm not trying to insult anyone's intelligence, but some of our folks don't know what these terms mean. They may not ask, but I know I've seen some blank looks when those terms are brought up.

Let's take a moment to quickly cover a few:

Wingspan: Distance from wing tip to wing tip. When the wing tips are curved, it's a good idea to estimate how much area is left out by the tips and decrease the span used in calculations accordingly.

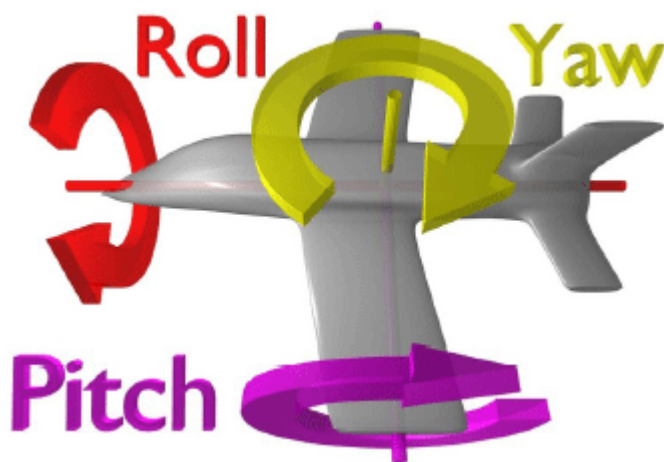
Wing Chord: Distance from the wing's leading edge (front) to its trailing edge (rear). We will use average chords a lot. When calculating the average chord, use the chord at the center of the fuselage, not at the wing root for the center chord. For the tip, use your judgment as to how much to knock off curved tips to make a reasonable tip chord.

Wing Area: The area of the wing, including those parts covered by the fuselage, nacelles and so forth. The area, mathematically, is equal to the average chord times the span.

Wing Loading: The wing area of the airplane (in square feet) divided by the weight (in ounces). This can really vary between models. Wing loadings that are fine for quarter-scale models are prohibitively heavy for smaller models, for example. The lighter the wing loading, the slower the model can fly and the more maneuverable it can be. On the other hand, a lighter wing loading will also increase the model's vulnerability to wind and turbulence.

Aspect Ratio (AR): The relationship between the wingspan and the average wing chord. The higher the AR (i.e., the longer the wingspan is compared to the chord), the more efficient the wing usually is. That's why gliders have such long, thin wings. On the other hand, the longer the wing, the slower the airplane will roll. Long wings have a lot of inertia to overcome. Think of the wings as being like a figure skater's arms; the further out they stretch, the slower she pirouettes. So, aerobatic airplanes have shorter wings and can roll faster. Very short aspect ratios, such as ones on circular airplanes like the famed F5U Flying Flapjack give models great maneuverability, but woe to the pilot if the engine dies as the glide is essentially non-existent. For typical models, Aspect Ratios normally run from 5:1 to 6:1. We're going to compromise and go with 5.5:1. (In Air Force tech school, this is where the instructor would usually stomp his foot on the floor a few times.)

Center of Gravity (CG): Most folks think this is only the line the airplane balances on when held by the wingtips. WRONG! The CG is a three-dimensional balance point. An airplane will balance on that point, no matter what attitude it's in. When the airplane yaws, it yaws around the CG; when it rolls, it rolls around the roll axis. Ideally, we should balance each model at least on the pitch AND roll axes, not just the usual pitch axis. In the picture below, the CG (not marked) is where the three axes intersect.



Enough theory, what do we do with this stuff?

I use a set of rules to determine the basic proportions of every model I design. These rules were originally compiled by the late Chuck Cunningham. Chuck was a columnist for R/C Modeler magazine for many years and designed several models, including the well-known Lazy Ace.

Ok, so what did Chuck do that was so great? Simple, he looked at what worked. Chuck compiled the proportions of many successful RC models and averaged them out. He then created a series of nomograms from the averages and wrote a series of articles on using them. Those articles were published in RCM every couple of years for decades. I took the articles and converted the nomograms back into equations, which I now use in a spreadsheet. Do you need to use a spreadsheet? No, but it is a faster way to calculate things and lets you quickly make a lot of "what if?" comparisons.

What you really do need are the proportions. With them, all you need to do is set the wing area and do a little calculating. These proportions are based on the most common sport model aspect ratio (AR) of 5.5:1. (Gee, where'd we hear that?...)

Here are the proportions for monoplanes. Remember that these are for "average" models. If you want to design a 3-D airplane, you'll need to increase the sizes of the control surfaces relative to the flying and tail surfaces.

Average Wing Chord Square root of: (wing area divided by aspect ratio)

IMPORTANT: Divide the area by the AR FIRST, then take the square root!

Span Aspect: ratio times average chord

Aileron Area: (@)6% of the total wing area PER AILERON

Total Fuselage Length: 75% of the span
 Tail Length: 37.5% of the total fuselage length
 Nose Length: 16.875% of the total fuselage length, from the wing LE to the back of the propeller
 Horizontal Stabilizer Area: (including elevator) 20% of the wing area (this includes the elevator)
 Elevator Area: 20% of the horizontal stabilizer area
 Horizontal Stabilizer Average Chord: (Aspect Ratio of 3:1) Square root of (the horizontal stabilizer area divided by 3)
 Horizontal Stabilizer Span: 3 times the horizontal stabilizer average chord
 Vertical Stabilizer Area (with rudder) 8.5% of the wing area. IMPORTANT: This includes the area of the fuselage side that is under the horizontal stabilizer!
 Rudder Area: 40% of the vertical stabilizer area

Once you have the area and the aspect ratio, all else follows. Okay, but how big a wing do you need? That's a good question. You need to look at how heavy the model will be and what kind of wing loading you can live with. Be realistic about how lightly you can build a model. A good way to get a guess is by looking at kits and plans you and others have done.

Let's assume you decide your airplane will weigh 5 lbs. and that you'd like the wing loading to be 24 ounces per square-foot.

1. Convert the weight to ounces. 5 lbs. multiplied by 16 ounces/lb makes 80 ounces.
2. 80 ounces divided by 24 ounces per square-foot produces 3.33 square feet. At 144 sq. inches per square-foot, that's about 480 square inches.
3. With an aspect ratio of 5.5:1, the average chord is the square root of $480/5.5$, which equals about 9.34 inches. The span is then $9.34 \times 5.5 = 51.4$ inches.
4. Now, use the proportions from the table to calculate the proportions you'll need.

For our project we get the numbers below:

Average Wing Chord: 9.34 inches
 Span: 51.4 inches
 Aileron Area: (@) 28.8 sq. inches
 Total Fuselage Length: 38.5 inches
 Tail Length: 14.5 inches
 Nose Length: 8.7 inches
 Horizontal Stabilizer Area (including elevator): 96 sq. inches
 Elevator Area: 19.2 sq. inches
 Horizontal Stabilizer Average Chord: 5.7 inches
 Horizontal Stabilizer Span: 17 inches
 Vertical Stabilizer Area (with rudder): 40.8 sq. inches
 Rudder Area: 16.3 inches

The first thing you might notice is that the numbers for the fuselage don't quite add up; the sum of the wing and tail chords, plus the nose and tail lengths is actually about 38.25 inches, not 38.5. What gives? That's due to rounding when calculating. The error is about 1/4 inch over the length of the fuselage. We can ignore this. These numbers are NOT hard rules that must be obeyed to the last decimal point! Remember, these proportions are all based on AVERAGES of successful models, so there is leeway.

Okay, so now you know how big the areas must be, how far apart the tail and wing must be, and so forth. How do you convert these numbers into airplane drawings? Well that's going to be the topic for next month's article, so we'll wait until then, okay?