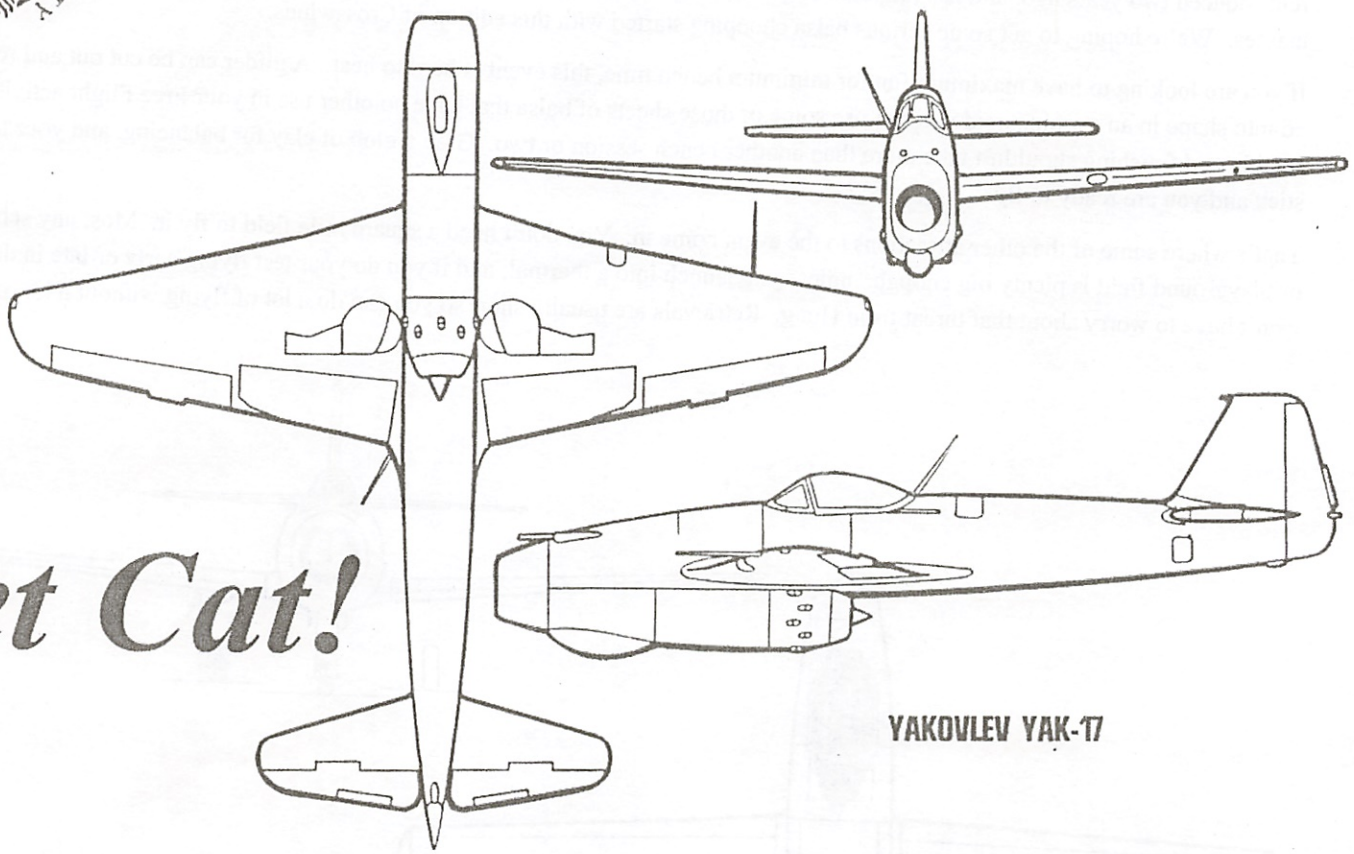
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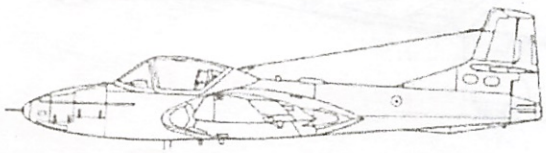


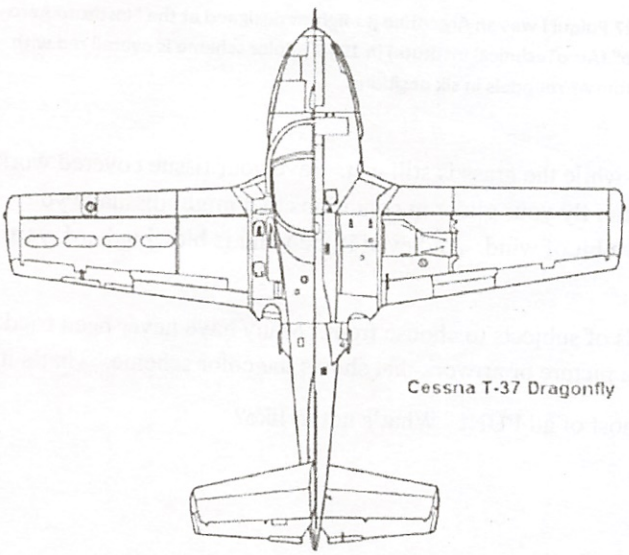
Jet Cat!

YAKOVLEV YAK-17



CROSSWINDS
RUSS BROWN
4909 N. SEDGEWICK
LYNDHURST, OH 44124





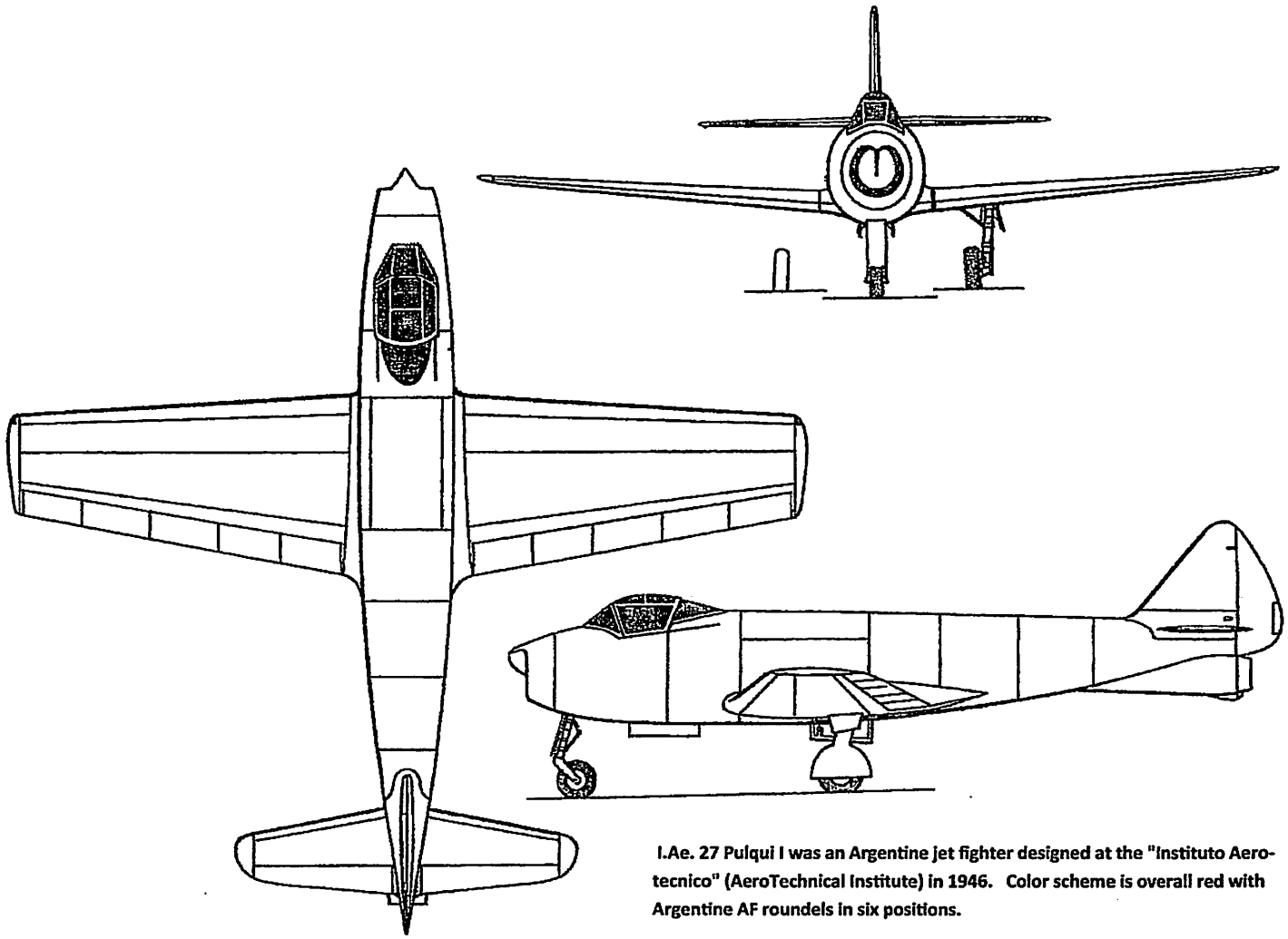
Cessna T-37 Dragonfly

Reintroducing Jet Cat

Jet Cat has been around the track here in the CFFS. It was a popular event at one time some years ago, and then faded away. It was reintroduced two years ago, and has limped along with a few contestants but hasn't yet captured the imagination of the Free Flight masses. We're hoping to get some serious balsa chopping started with this edition of Crosswinds.

If you are looking to have maximum fun for minimum bench time, this event is hard to beat. A glider can be cut out and rough sanded into shape in an evening, and you can use some of those sheets of balsa that have no other use in your Free Flight activities. Assembly and finishing shouldn't take more than another bench session or two. Grab a glob of clay for balancing, and your launching stick and you are ready to fly.

That's where some of the other attractions to the event come in. You don't need a square mile field to fly it. Most any school yard or playground field is plenty big enough...unless you launch into a thermal; and if you do your test flying early or late in the day, you won't have to worry about that threat from Hung. Retrievals are usually short so you can do a lot of flying without a lot of chasing.



I.Ae. 27 Pulqui I was an Argentine jet fighter designed at the "Instituto Aerotecnico" (AeroTechnical Institute) in 1946. Color scheme is overall red with Argentine AF roundels in six positions.

When it comes to contest day, you'll have an event to fly early in the day while the grass is still wet. Save your tissue covered works of art for later. If you're looking to hook a boomer later in the day, you can fly your glider in conditions that might dissuade you from launching a stick and tissue job. Jet Cats are tough, and can handle a bit of wind. And even if the wind is blowing hard, your chase probably won't take you across the field.

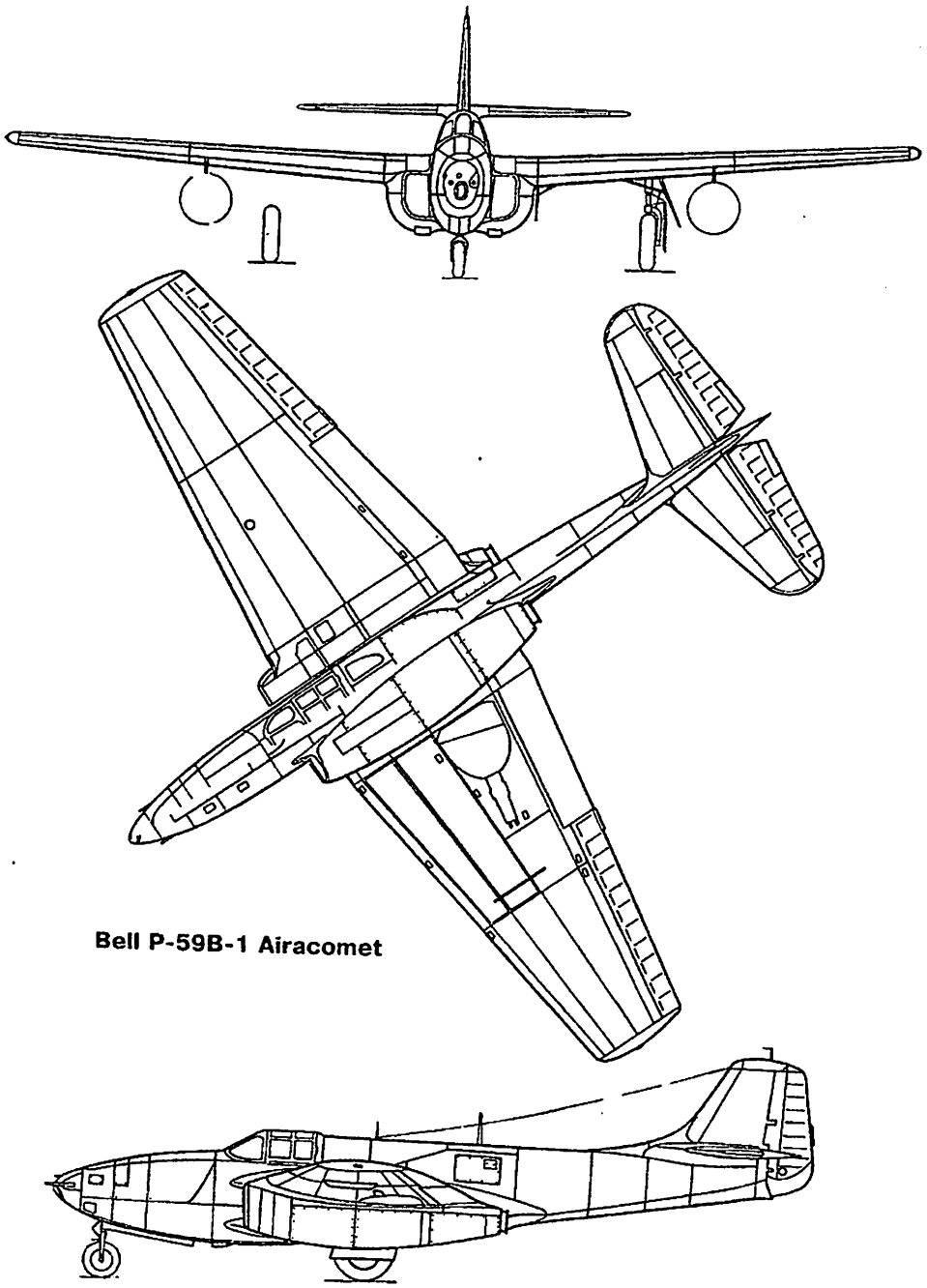
When it comes time to pick a subject for your Jet Cat, there are thousands of subjects to choose from. Many have never been tried. Documentation requirements are minimal. Bring a 3 view drawing and a picture or artwork that shows the color scheme. That's it.

Quick to build, happy on a small field, a bit of a challenge to trim, and most of all FUN! What's not to like?

I began building my first Jet Cat with a lot of enthusiasm...and ignorance. I thought it would be a simple matter of slapping it together in an evening, and trimming it to fly the next day. The building part went swimmingly. I thought the Bell P-59 Airacomet was well suited to Jet Cat-ification. I read up on the subject on the internet discussion forums that cater to Free Flight (Small Flying Arts and Hip Pocket Aeronautics) and used the best practices of the *real* catapult glider guys. Figured I had it made. My first trip to the flying field was humbling. I had built a P-59 lawn dart. I tried all the adjustments that I knew how to make, and broke the model so many times that before long it was more glue than balsa. Being more stubborn than clever, I built a second model just like the first one, but a little bit lighter (the first was quite heavy) and with a bit more dihedral. It didn't exactly "fly right off the board" but it didn't take too long to get it to behave. First lesson learned: if the model doesn't fly, build another.

Lesson number two was that the adjustments required are quite small. Moving the CG a tiny amount made an enormous difference, and tweaks to the tail surfaces needed to be miniscule. Launch angle, bank angle, and velocity all need to be consistent too. It was a whole new challenge in Free Flight, and quite gratifying to work out the tricks to the game. I've pulled out some of the best advice I've found from a variety of sources and included it in this article. There are a whole bunch of three view drawings of jets that could be reasonable candidates for the event scattered throughout the newsletter. There are a great many more out there in the annals of aviation. Pick something that tickles your fancy, grab a six inch dowel and a hank of rubber, and give it a try!

Wingnut



Bell P-59B-1 Airacomet

Jet Cat "Plans"

The word "plans" is in quotation marks for a reason. There ain't much to it. Get a three view, copy it at the size you like, draw on the incidence lines for the flying surfaces, and mark a spot for the launch hook. Yer done. FAC rules allow you to use a profile fuselage so you don't have to be concerned about cross sections. The following articles have some ideas on how to set up those incidence angles. Short version: you don't need much!

A couple other things are worth mentioning. The FAC Jet Cat rules have both bonus points, and scale judging. The BPs are pretty limited: 5 points for flying wing or canard configuration, and 1 point for each scale engine pod, or tank in profile not included in within the contours of the airframe. That's it. Tip tanks and engine pods are a repair job waiting to happen on every landing, and those big delta wing jobs are challenging to trim so the BPs don't come easily.

Scale points are pretty basic too: Up to 8 points for color and markings, 8 more for details, and 4 for workmanship. That's it!

***Lee Hines and Stan Buddenbohm** are a couple of the most accomplished catapult glider fliers in the world and hold many AMA records in glider flying. Here's some advice gleaned from their postings on the internet. I've also added some comments made by another glider guru. **Bob Eberle** published an article in the New York Indoor Times: Tips On Trimming and Flying a Catapult Glider. Many of his suggestions are quite useful to outdoor Jet Cat.*

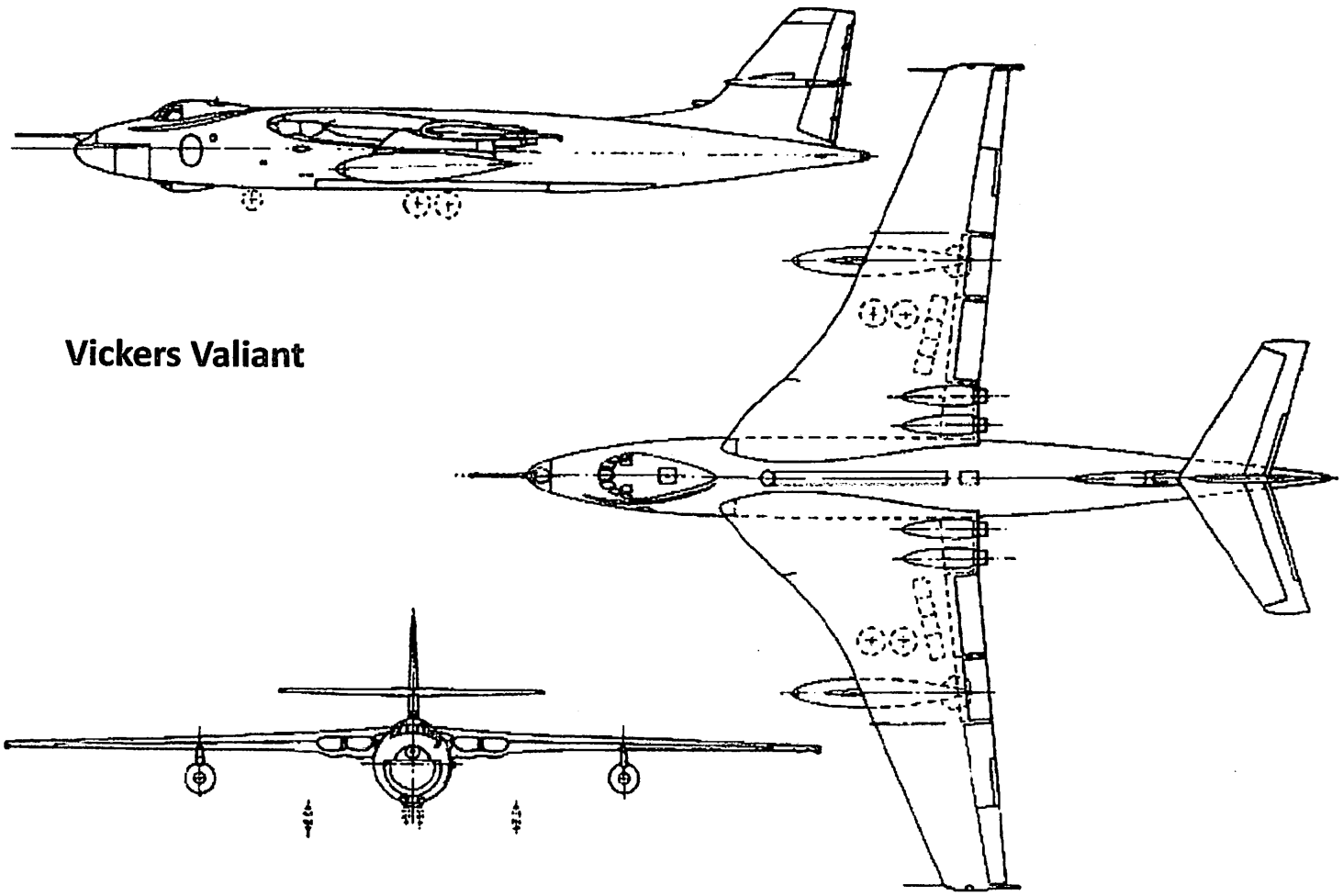
CONSTRUCTION

The most important tools for building gliders are sanding blocks. You should make your own - don't worry, it's easy. Use straight flat wood, balsa will do, and make at least two blocks. One should be about 1x3x8 and the other 1x1x4. Sandpaper, 100 grit on one side and 150 grit on the other, can be attached with either rubber cement or spray contact cement. Don't use cheap sandpaper. Use the large block for fast removal over large areas and the small block when more control is needed. For final smoothing use a folded piece of 320 grit. You can't go wrong by making more blocks with different grits.

After tapering the wing thickness and roughing out the airfoil some use a broad tip marker to make lines from the trailing edge (T.E.) to the leading edge (L.E.), at 1/2" intervals over the top of the entire wing. This is an aid in shaping the airfoil. As you sand and the marks disappear you will get a better impression of how the work is progressing.

Be very careful with the final shaping of the L.E., this is important for top performance. When your finished shaping the wing run some thin instant glue along the L.E., a short section at a time, wiping it quickly with a paper towel. This will greatly increase the ding resistance. [editor's note: Some guys glue a piece of thread or basswood onto the L.E. to toughen it.] Trailing edges should not be paper thin, 1/32 is thin enough - wing, stab, or rudder.

A good technique for attaching the stab is to first use an office type glue stick to tack it in place, reposition it until it's exactly right, then go over the joint with thin CyA - you don't need to wait for the glue stick to dry. Use the same method for the rudder.

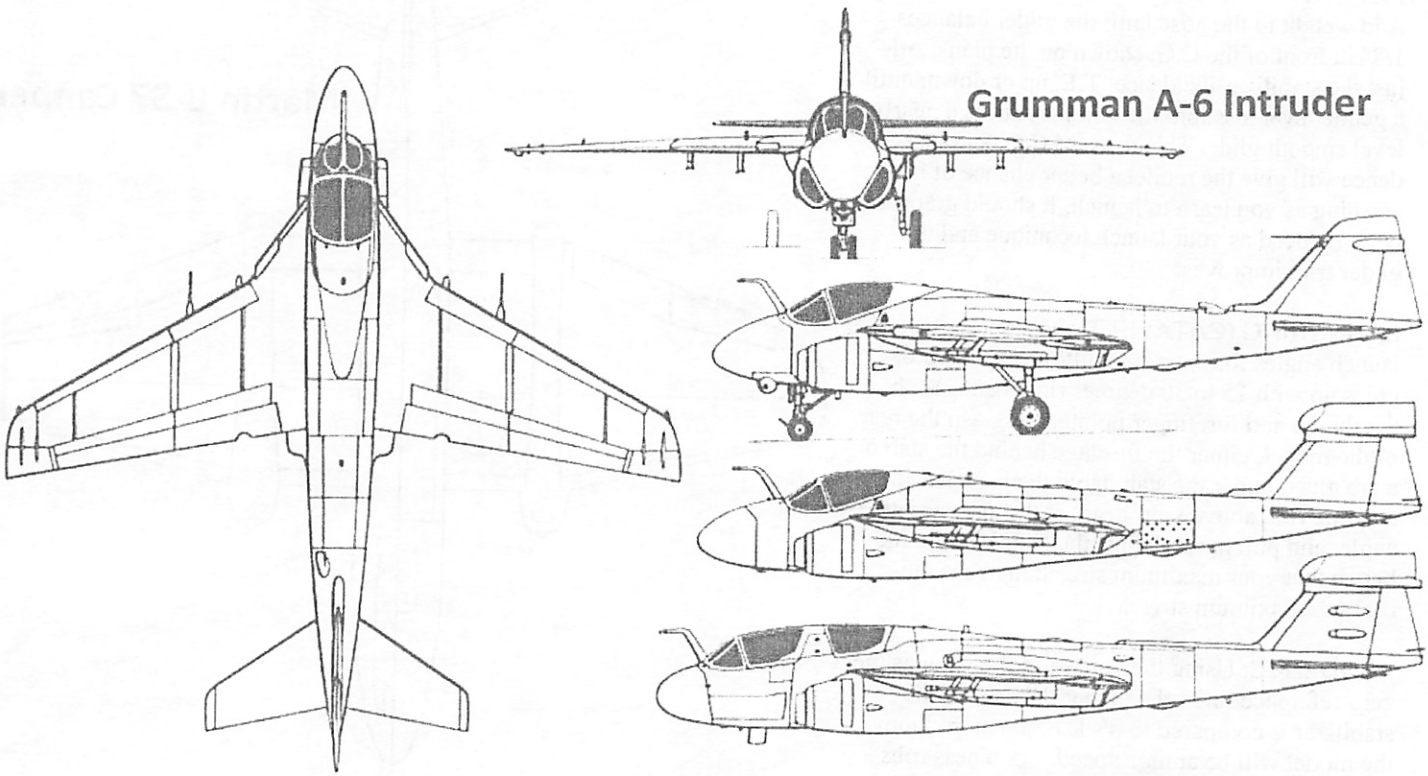


Vickers Valiant

FINISH

Adding some finish will reduce drag and with this method you can prevent unwanted warps. Use Min-Wax Helmsman Spar Urethane found at the hardware store. With a 1/8x3/4x6 stick dip some Urethane onto the glider and spread it as far as possible. [LRH adds: Do one to three panels at a time.] Now smear it around and wipe it off with a paper towel - gently. Wait a day and sand smooth with 400 grit - not too much. A second coat will make the glider waterproof. For easier spreading the Urethane can be thinned 10-20% with mineral spirits. Filling in the grain for an ultra smooth finish is of no benefit.

editor's note: AMA gliders only need finish to keep them from warping. Some guys add spots of bright paint to make them easier to see in the air, and in the weeds. Jet Cats need to have an authentic paint job if you want to get the scale points. I've used Design Master rattle can spray to finish my gliders. Use whatever you prefer to get a waterproof and scale looking finish. There's more on this subject in this issue.



BUILT-IN ADJUSTMENTS/TRIM

Left and right are oriented looking from the back to the front of the model. These instructions are written for a right-handed person - right bank on launch with a left glide circle. Left handers should reverse wing skew, stab tilt, rudder offset, and wash-in.

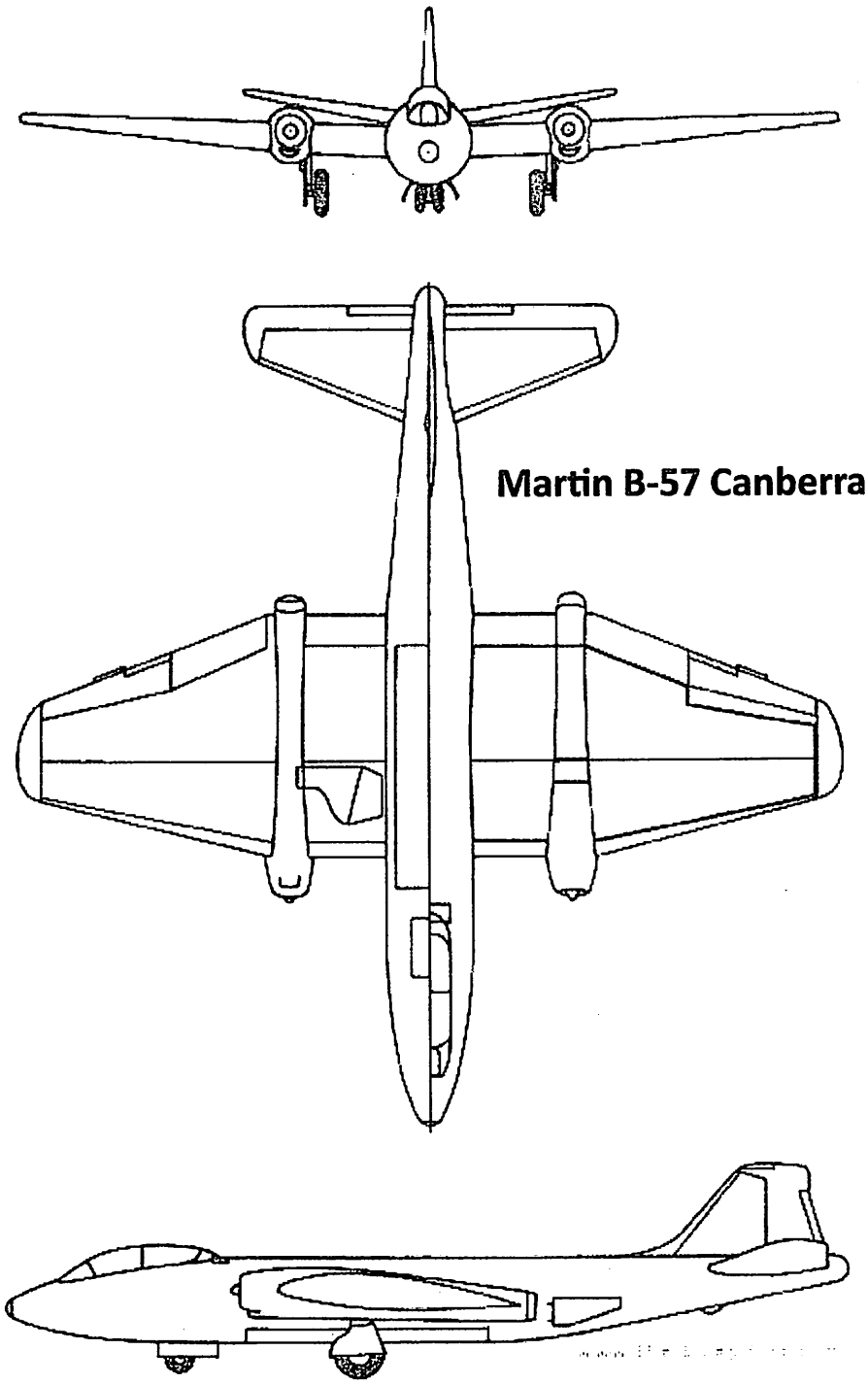
Gliders go through a major speed change between launch and glide. Various aspects of the glider have more, or less, effect depending on speed. At high speed rudder turn has more effect, at middle speed wash-in has it's greatest effect, and at low speed stab tilt and tip weight have their greatest effect.

Very small warps (1/64") can make a large difference.

Most trim should be built-in. Fine tuning can be done at the flying field by careful bending, but it's best to do as little of this as possible.

1) Build some incidence into the fuselage, about 1/32 for catapult and a few hairs more for HLG.
2) Glue the wing to the fuselage so that the wing centerline is 1/64th more to the left at the L.E. than at the T.E. - it's skewed.
3) Attach the rudder so that the T.E. is 1/64 to 1/32 more to the left than the L.E.
4) Attach the stabilizer so that it has between zero and 1/8 tilt, right tip lower than the left tip. The way to measure this is to turn the model upside down on a flat surface so that it rests on its wing tips, prop up the fuselage, and measure from the stab tips to the table. Old time gliders sometimes thermal better with three times as much stab tilt.
5) Balance per plan. If there is no C.G. shown a good place to start is 50%.
6) Wash-in: Complicated, very important, but just use the minimum you need. Use a wash-in wedge glued under the T.E. of the left

wing at about 2/3 span. On polyhedral wings glue it just outside the tip dihedral joint. What's a wash -in wedge? Balsa, 1/2-in. wide, .05-in. thick at the rear edge, and almost zero thick at the front edge. Length usually depends on wing span. For 18-24in. spans 1 1/2-in. is a good length.
7) Wash-out: Rarely necessary. [LRH adds: I like to use some tip washout, as some know.] Turbulators: Adding turbulators like you might on a towline glider is a waste of time, forget it.



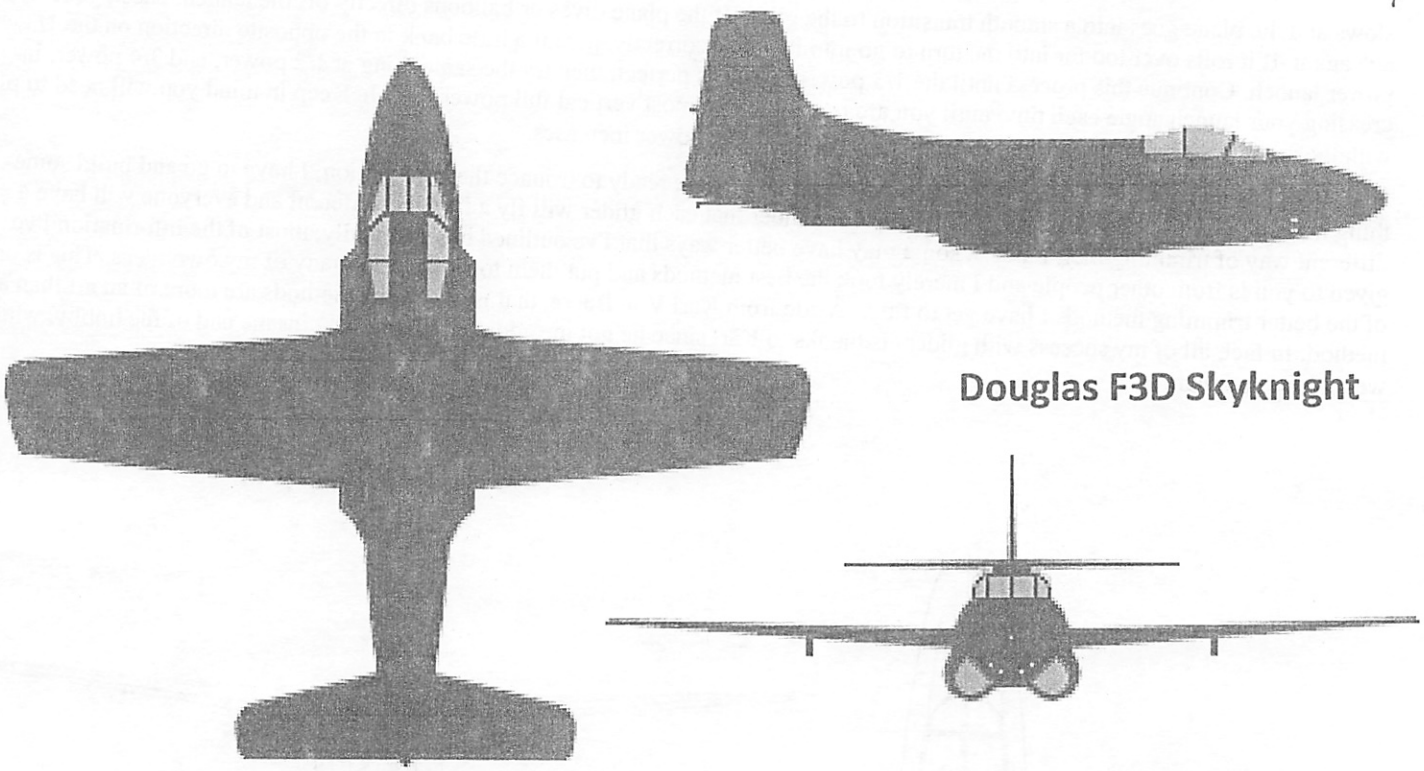
FLYING
Add weight to the nose until the glider balances 1/8" in front of the C.G. shown on the plans. Adjust the stabilizer incidence, T.E. up or down, until a gentle level toss into the wind produces a nearly level smooth glide. This forward C.G. and incidence will give the model a better chance of not crashing as you learn to launch. It should gradually be reduced as your launch technique and the glider trim improves.

LAUNCHING (CATAPULT): The optimum launch angles for most catapults are 50 to 75 degrees up with 15 to 30 degrees right bank. With the thumb and forefinger pointed up grasp the rear of the model, either the fuselage behind the stab or a tab glued under the stab. Hold the launcher in front of you, above your head, at the appropriate angle, and pull hard! Adjust the length of the rubber so that your maximum stretch matches the rubber's maximum stretch.

INCIDENCE: Using the bottom of the wing as the zero reference line - the higher the T.E. of the stabilizer is compared to it's L.E. the more loopy the model will be at high speed. Loopiness robs altitude but you need some of this incidence for a good stable glide. Don't be fooled, just because a glide test looks good doesn't mean you have the right amount of incidence. The correct amount depends on the launch. As you progress you'll want to get all of the altitude you can so you will need
to fine tune the adjustments. At the top of the launch the glider should almost stop before turning/plopping into the glide.
At this point it should be just past vertical, about 100 degrees. The amount of incidence you need depends on the launch speed. If the model is zooming past 100-deg., looping too much, then decrease the incidence (stab T.E. down). If the glider never gets to the 100 deg. angle before stopping then increase the incidence (stab T.E. up). Take it slow and use very small adjustments. Like bending an area as wide as your finger, right next to the fuselage, 1/64-in. - or 1/4 turn of a screw.

TURN: Rudder turn is used to counter the right bank of the launch. You shouldn't bend the rudder T.E. more than about 1/32-in. This is different from the rudder turn you built in. Always bend the rudder near the fuselage, if the top of the rudder is bent it can exaggerate spiral problems at high speed - even if the glide looks okay. Too much rudder turn will do the same thing. Once you have the right rudder setting for launch, any adjustment to the glide circle should be done with tip weight.
Simply add weight to the left wing tip to make a smaller circle or to the right tip to open the circle. A 50 to 70 foot diameter circle is good. Always - just one small change at a time!

Hopefully this will get you started, you'll be successful, and you'll have a bunch of fun.Feel free to ask questions of anyone that looks like they know what they're doing, most people in free flight are happy to help.



Tips On Trimming and Flying a Catapult Glider by Bob Eberle (from New York Indoor Times)

First let's start before you even leave the workshop. Pick your glider up, and hold it so you're looking at the side of the fuselage. Now take a very true straight edge and put it on the underside of the wing so that it extends back to the stab. Are the ruler and stab parallel? If not, then you have a decalage problem! If this doesn't get fixed, your plane will either balloon tremendously, or dive on launch. This is one of the most common problems I see with many gliders, and there is nothing else you can do to the trim that will fix it, except for making the wing and stab parallel. Don't try trimming it out of the model, believe me I have done everything known to man other than and wasted days doing so with no luck!

Now that you have zero decalage you can go about trimming the plane many ways, if you have a way that works, go for it, but I'll give a brief description of my way if you don't. First I set the stab tilt according to the way in which I wish my glider to circle, but keep in mind this is very little tilt (1/4" max on big gliders). Next I set the rudder to the desired position, this can be done by warping or if you're confident of your plane, by gluing it on at an angle. Again, very little offset will do. Now, if you have a drawing of the model set the C.G. accordingly or if it's your own design, pick one! Once this is done, I add noseweight until I get the plane to balance at the C.G.

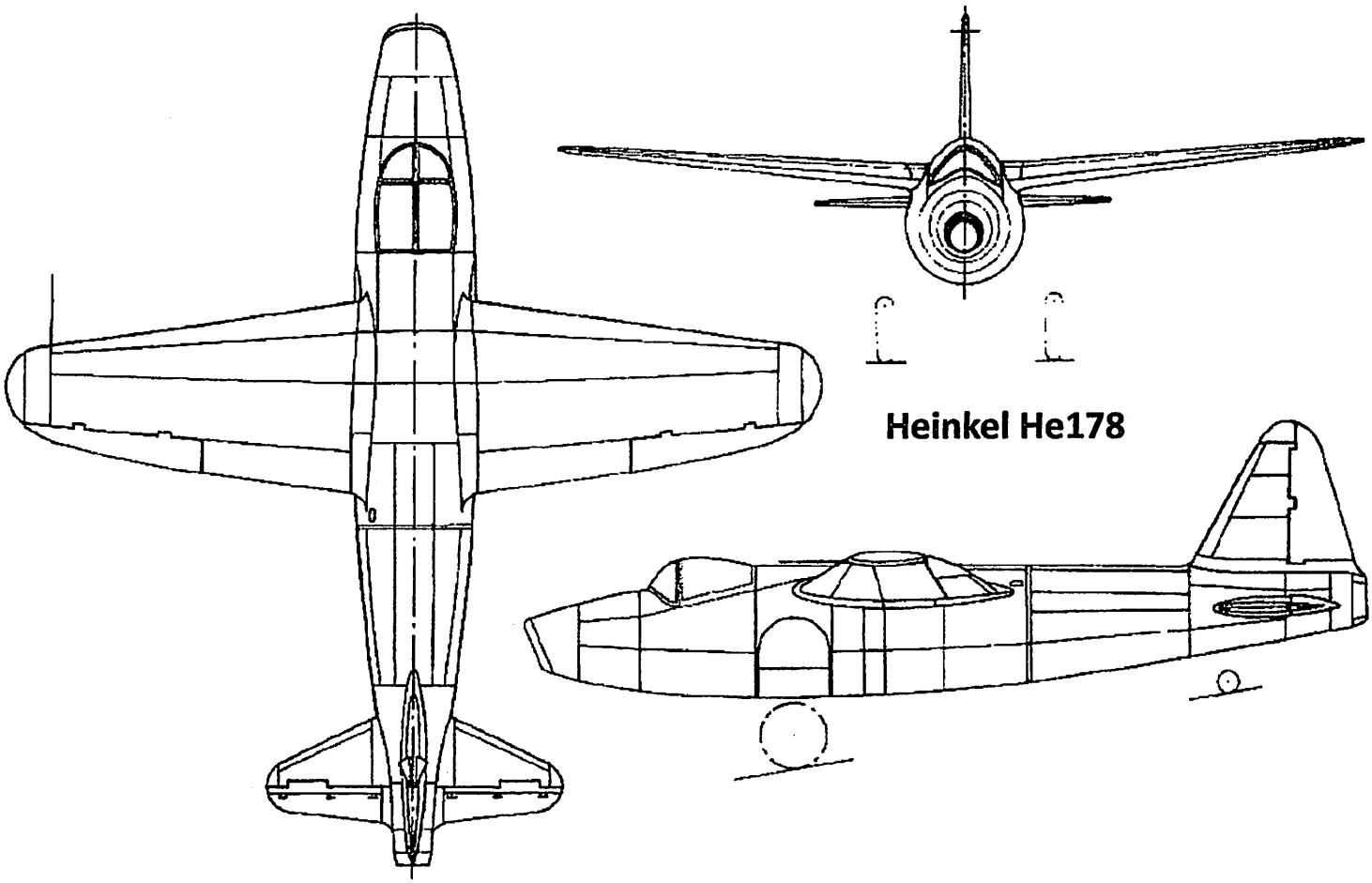
The next step is optional, if you fly indoors I would recommend it, but if you're flying an outdoor plane it isn't necessary. I take the tips of my wings and warp the last half inch up about an eight of an inch, but before you do this, your tips must be thin enough to flatten on launch! What this will do is after the launch speed slows down, the tips will return to the warped position and will "push" the glider over the top, allowing you to launch the glider very steeply and have it transition into the glide without much loss of altitude.

Now you're ready to fly, so grab your launch catapult, and your glider and lets head out to the contest. The first thing I do at the flying site is to test glide it. This is done by banking the plane into the direction it will glide, and giving it a little push with the nose level, not pointed up or down. If it dives into the turn, the plane is trying to turn so tight that it is trying to roll. First check the stab and make sure that it isn't warped too much, meaning if you trim your plane for a roll out by warping one side of the stab up and the other down that it isn't more than maybe 1/16 of an inch. Once this is fixed, if it still dives into the turn, look at the wing and see if any of the panels are warped up or down (excluding the tips). The desired warp at this point is to have the innermost panel of the wing on the inside of the turn warped downwards slightly (if you have polyhedral...otherwise it's the inboard half of the wing on the inside of the turn.) What this will do is to provide more lift on the inboard wing and will hopefully keep it from diving into the turn. If it continues to dive, the final solution is to add a bit of clay to the outboard wing tip, and glide test it until you get a smooth glide out of your hand.

Now that the plane glides I get the catapult and give the plane a straight ahead launch with no bank about 1/3 power, again keeping the nose level. The model should come off the catapult and start into a climb while assuming its own bank, then gradually the climb

slows and the plane goes into a smooth transition to the glide. If the plane dives or balloons directly off the launch, check your decalage again. If it rolls over too far into the turn to go into it's glide correctly, give it a little bank in the opposite direction on the 1/3 power launch. Continue this process until the 1/3 power launch is perfect, then try the same thing at 1/2 power, and 3/4 power, increasing your launch angle each time until you are ready for an almost vertical full power launch. Keep in mind you will need to play with the amount of bank you put into the glider on launch as the power increases.

You should be all set for that first perfect launch! Now that you are ready to trounce the competition, I have to go and build something new so you guys don't go and beat me! Just remember that each glider will fly a little bit different and everyone will have a different way of trimming their models, some may have better ways that I've outlined here. Actually, most of the information I've given to you is from other people and I merely took the best methods and put them together with many of my own ideas. This is one of the better trimming methods I have yet to find. Aside from Karl Von Buere, that is, trimming methods are more of an art than a method. In fact, all of my success with gliders is thanks to Karl since he got me addicted to this sick, insane end of the hobby, which we all love so much!

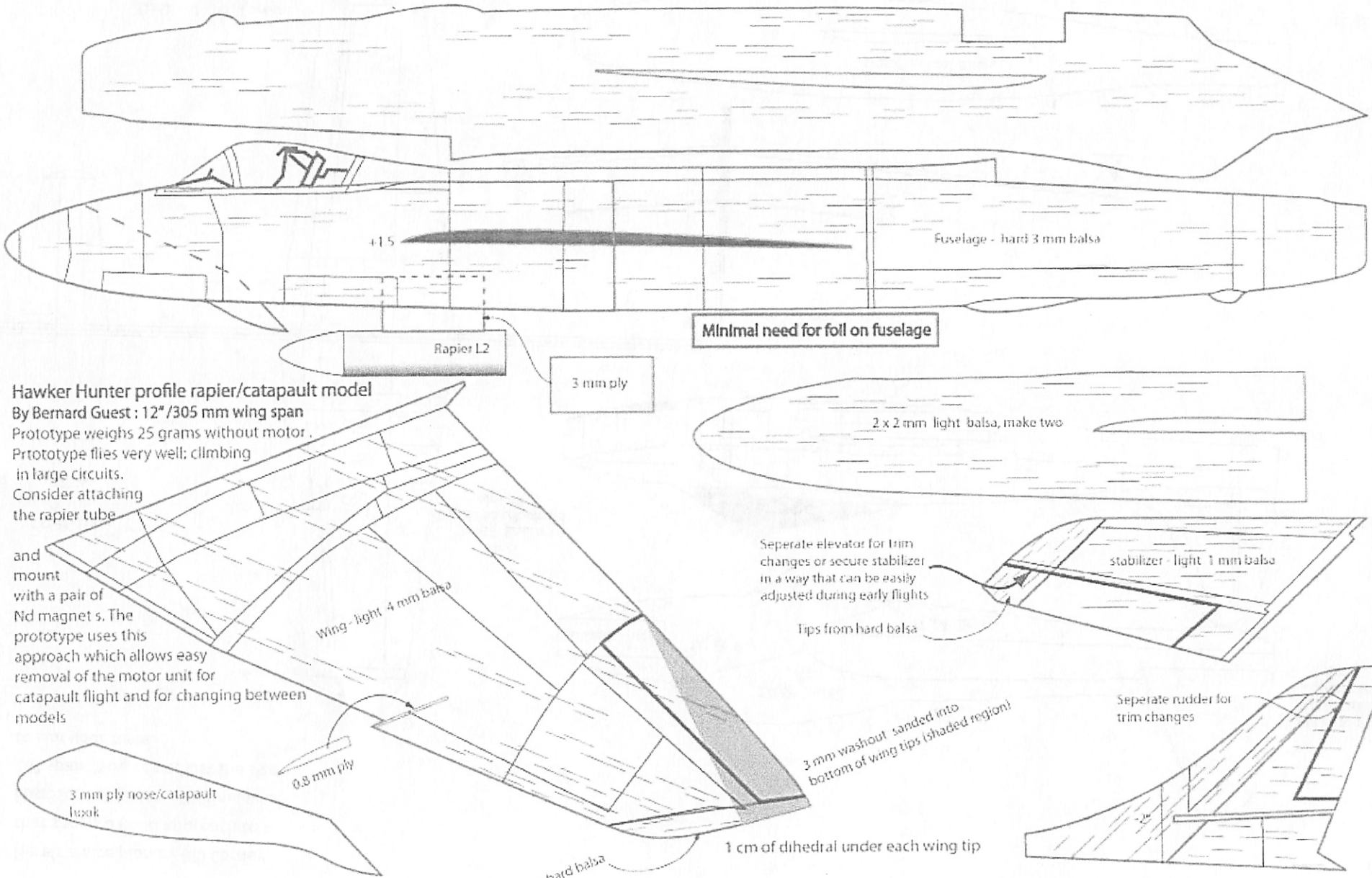


More on Finishing

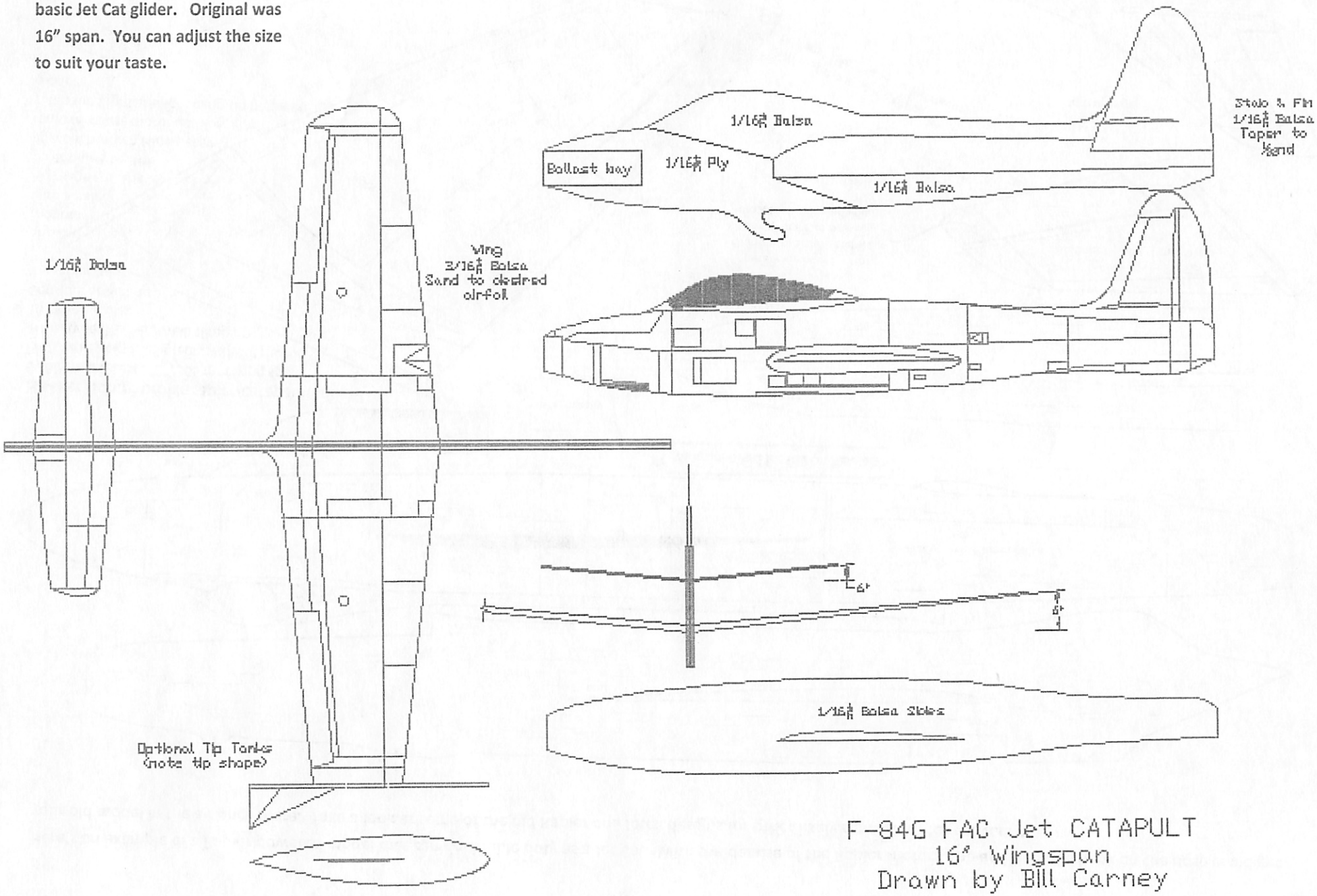
Bruce Kimball published a plan for a terrific Hand Launched Glider in the NFFS Digest. (Yes, it's definitely worth joining the NFFS.) "Hoosier Daddy" has proven to be a winning design, and his notes on finishing his glider are worth repeating as his models look terrific.

I finish all my models with the Minwax spar varnish method using the standard technique of smearing on the first coat, wiping it off with strips of paper towel, and letting it dry overnight. I found some great little tools called painter's pyramids that are a small triangle used to hold parts off the bench while drying. I sand the parts with 400 paper and then apply Createx water-based acrylic paints using an airbrush. I like my models colorful so they can be seen easily while in the air, but more importantly on the ground, and my factory colors give Jim Lewis something to tease me about.

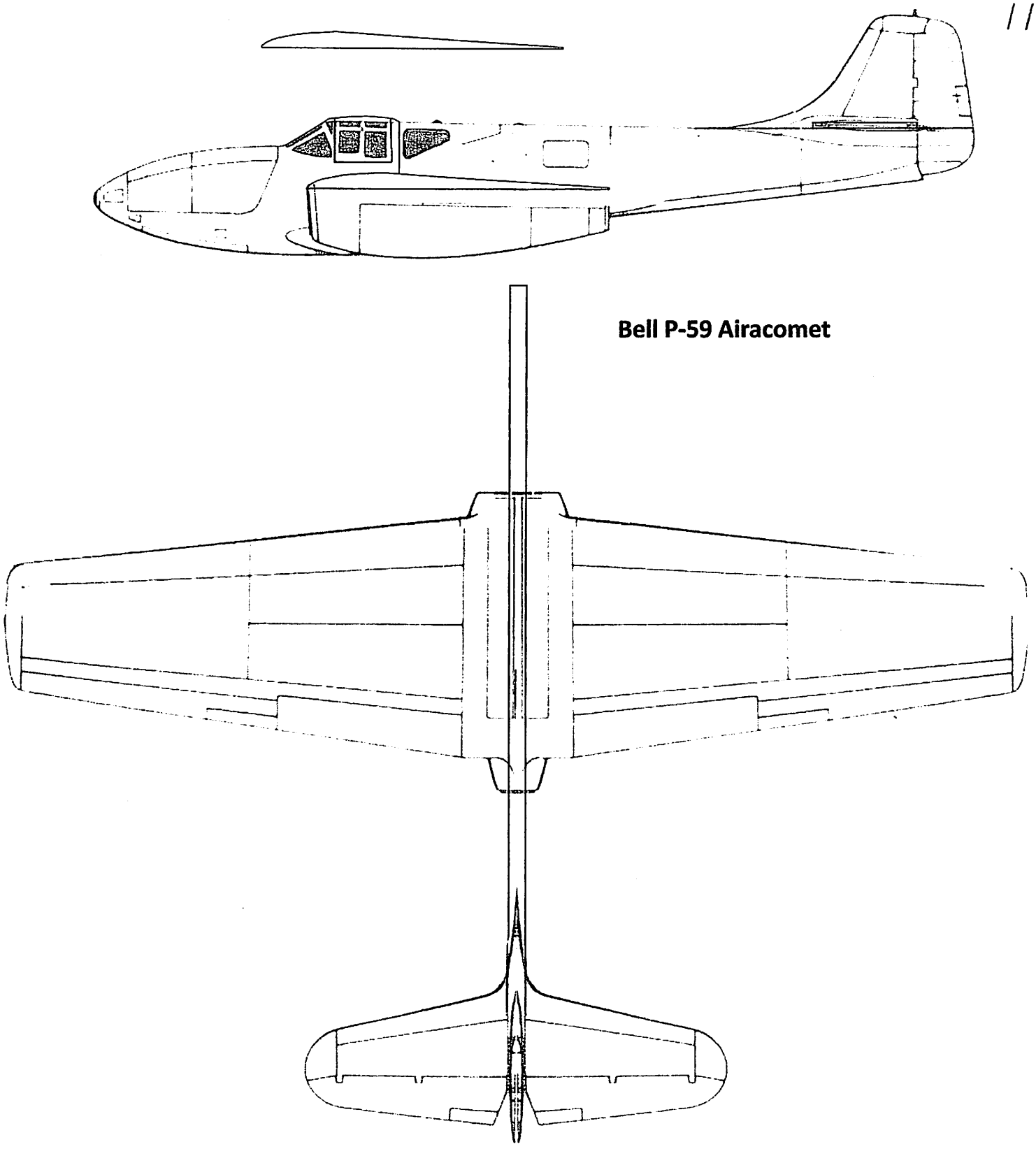
Here's an example of a Rapier powered model that can do double duty as a Jet Cat. With the demise of the Rapier motors, the addition of a hook on the nose could get your old model in the air once more. Take a look at some of the old Rapier and Jetex designs for other likely candidates for conversion.



Here's a nice plan by Bill Carney that shows a good approach to a basic Jet Cat glider. Original was 16" span. You can adjust the size to suit your taste.

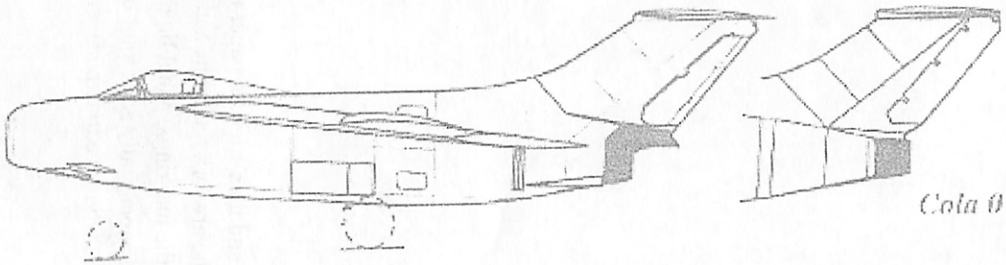


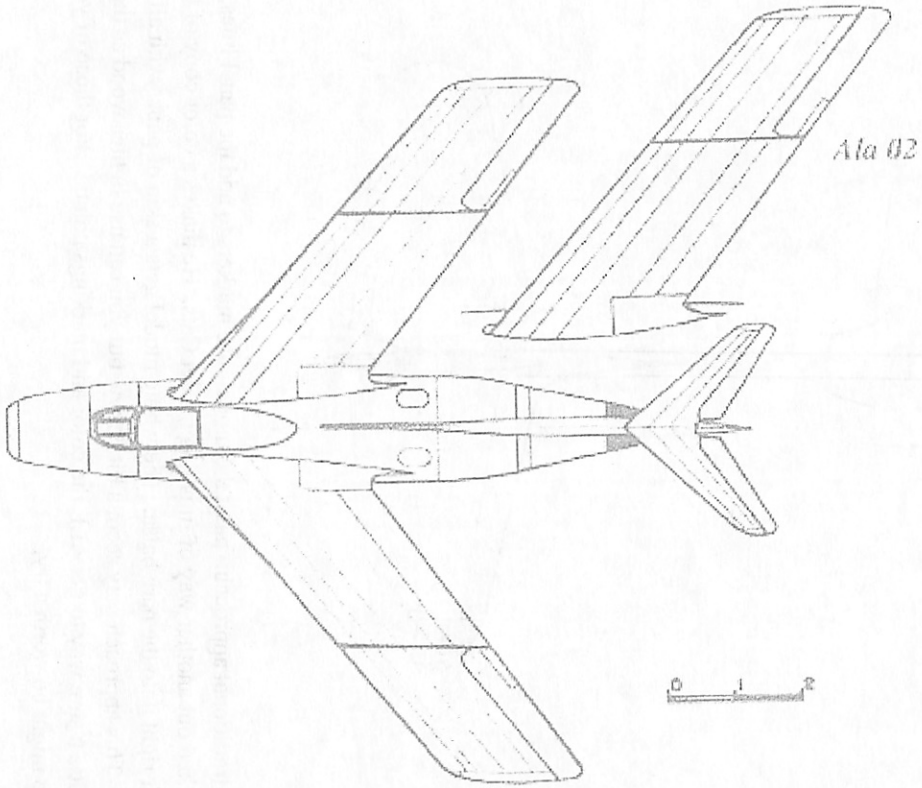
F-84G FAC Jet CATAPULT
16" Wingspan
Drawn by Bill Carney



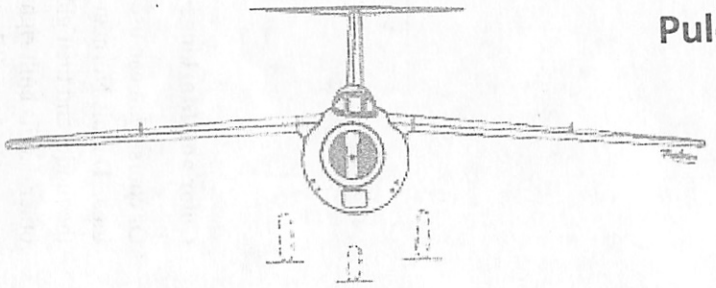
Color and Markings

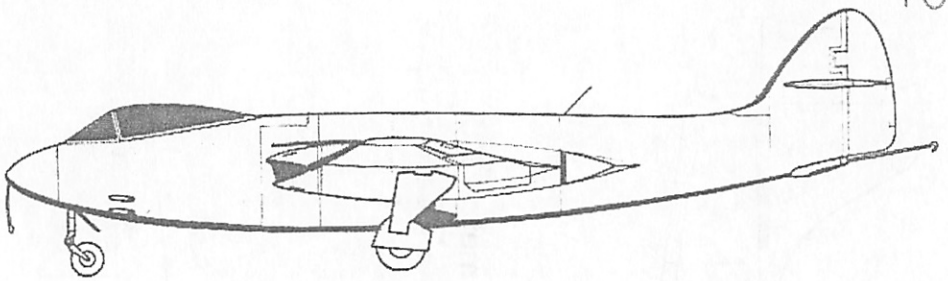
Of course you can use the traditional approach: paint the model, use markers to add the panel lines, and then stick on paper markings. Dennis Norman worked out another way of finishing his Jet Cats. He makes a color copy of the artwork that's the same size as the model and then glues it right onto the bare balsa. The whole model gets a skin of paper with all the markings, panel lines, and other details built right in. This approach may seem a bit heavy, but you can use lighter wood as the paper really adds a lot of stiffness. Looks terrific, and it's a sure way to get ALL the color and markings points! For those of you who love to experiment, a preprinted skin done on tissue might be worth a try.

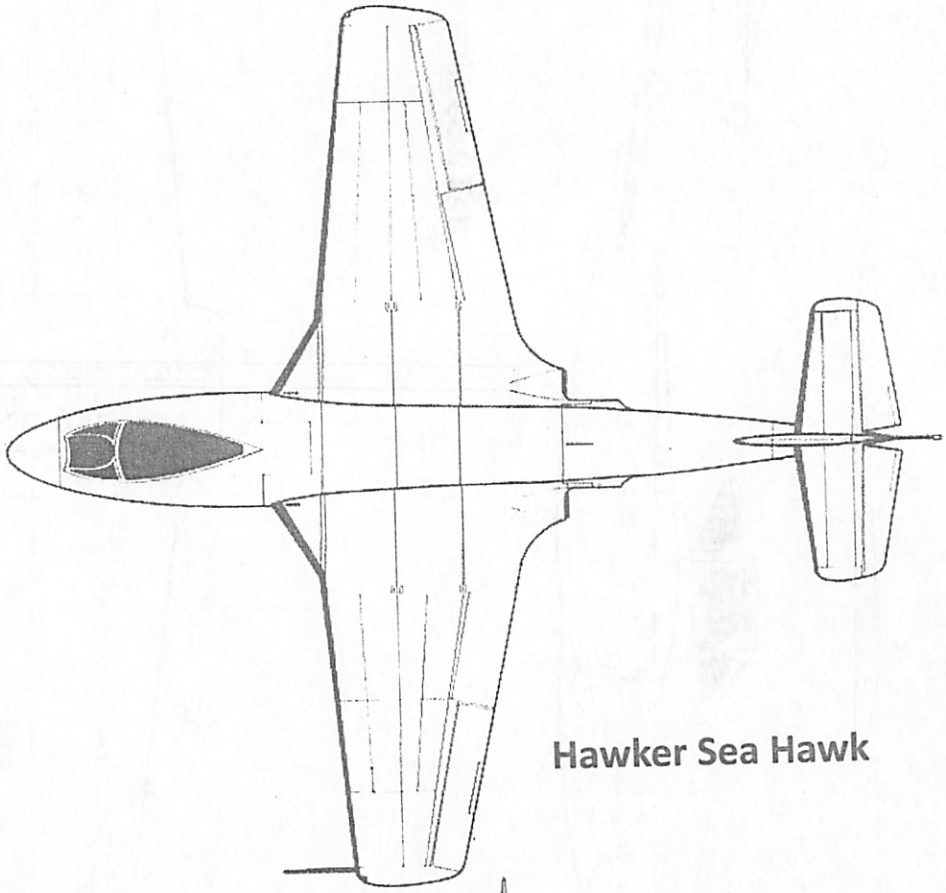




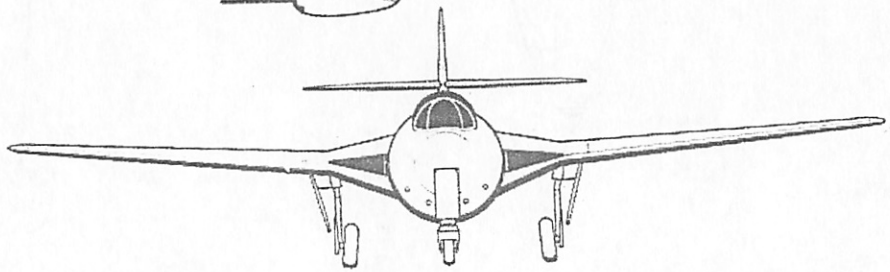
Pulqui II

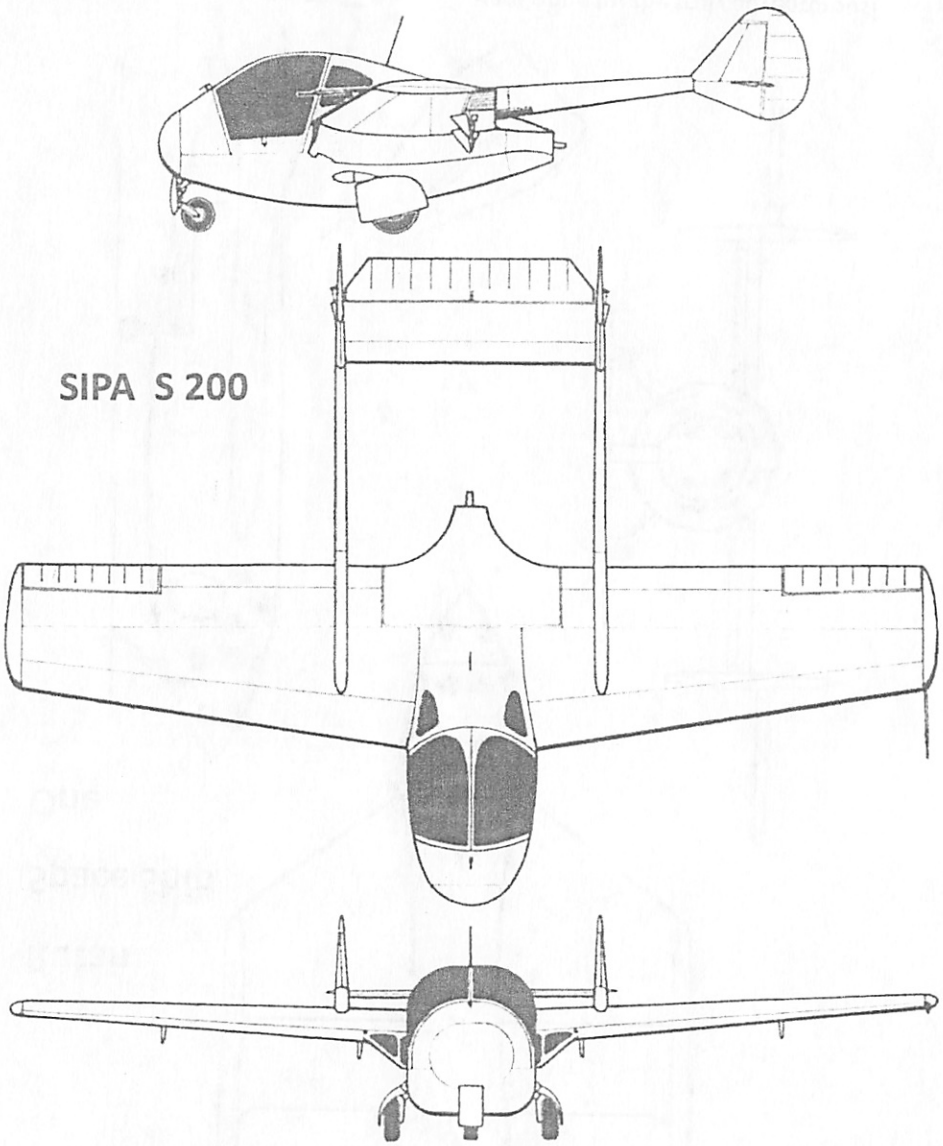






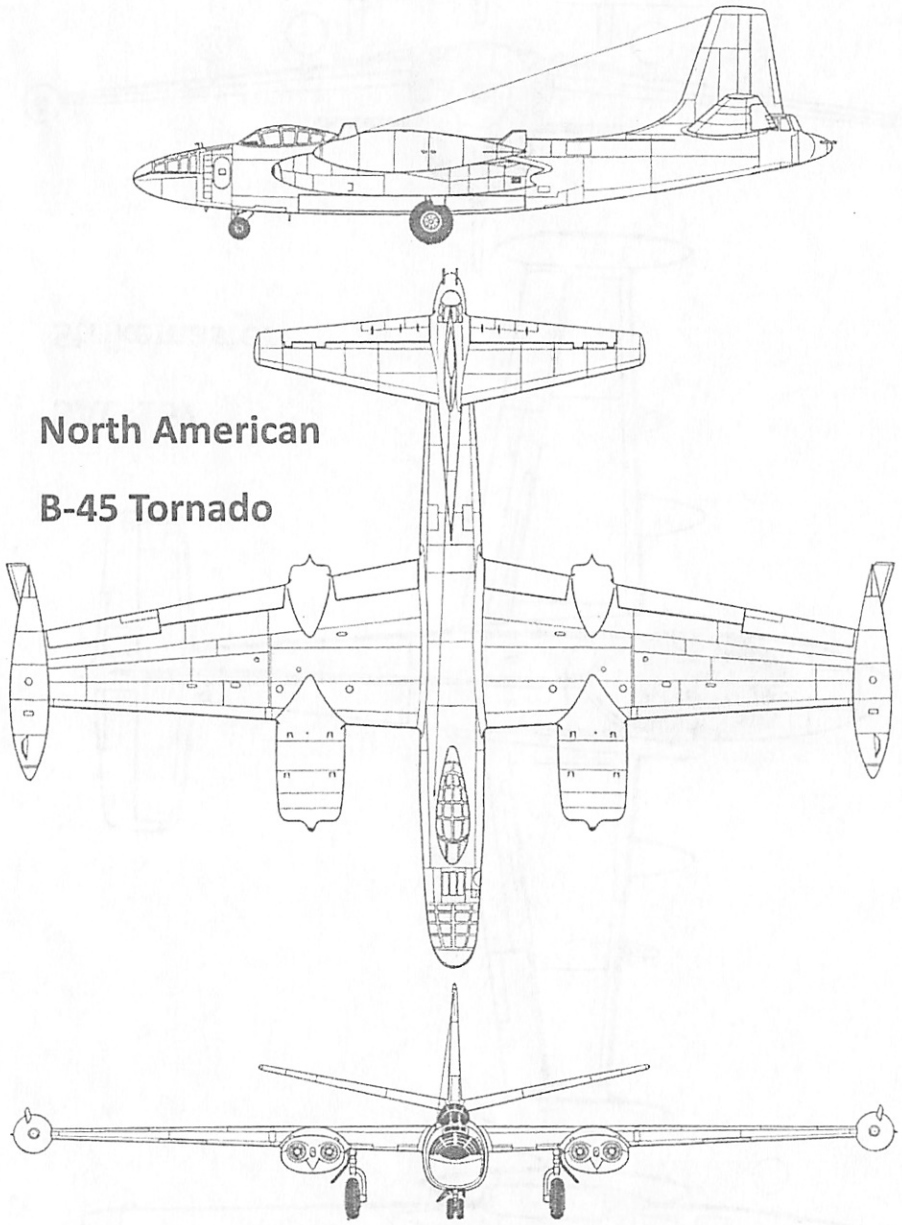
Hawker Sea Hawk





SIPA S 200

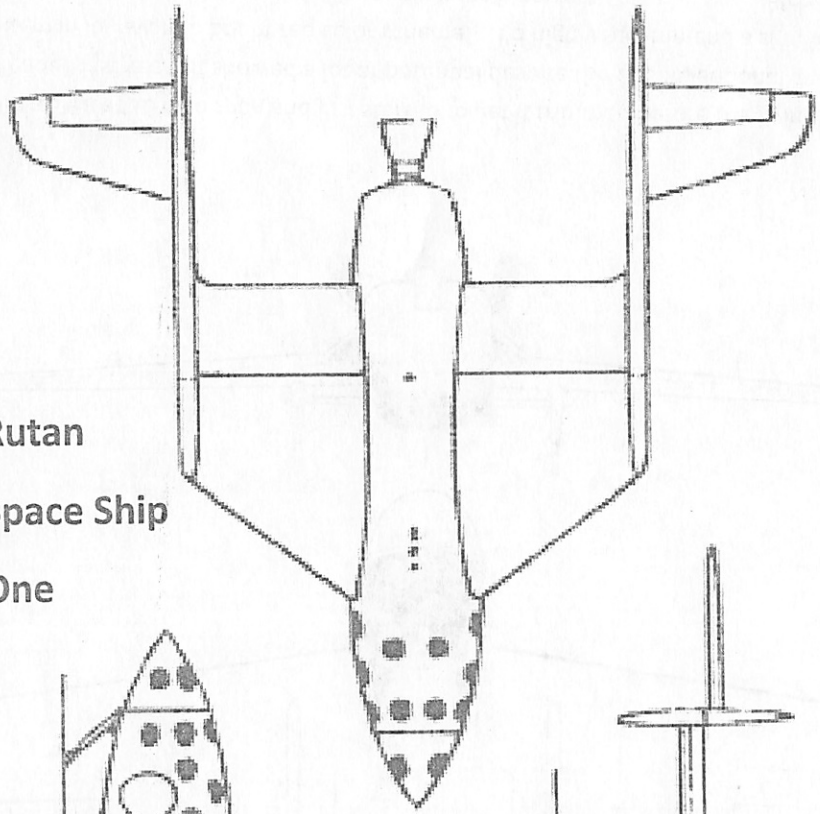
I built a SIPA at 16 inch span and just started to get it trimmed before the flying season ended last year. It showed a lot of potential despite the unconventional layout. Big item in its favor: a bright red color scheme! I'd highly recommend a simple jig to make sure the alignment of the flying surfaces is correct. Rich W.



North American

B-45 Tornado

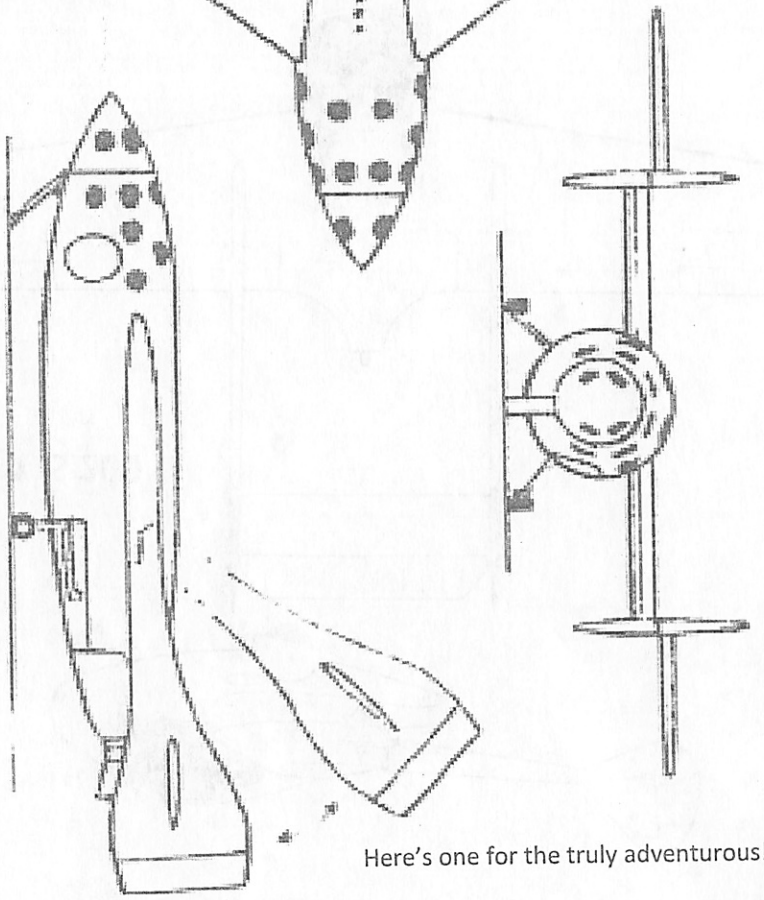
The B-45 Tornado is a bit short coupled, like a lot of the Jet Cat subjects, but it offers a couple of items in the plus column. With two engine nacelles and two tip tanks you pick up four Bonus Points. The nacelles are shallow enough that they shouldn't be as prone to breakage as those that sit on the end of long pylons. The tip tanks are vulnerable, but they're also optional as the Tornado flew in both configurations.



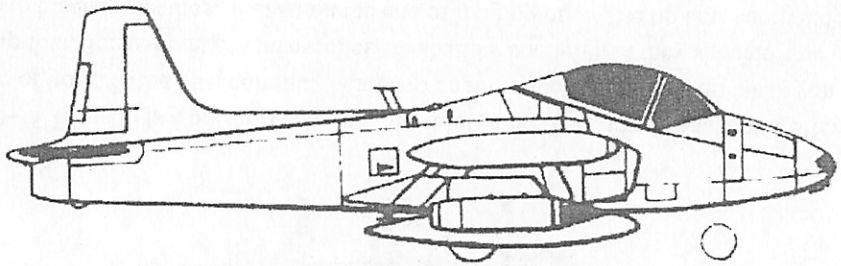
Rutan

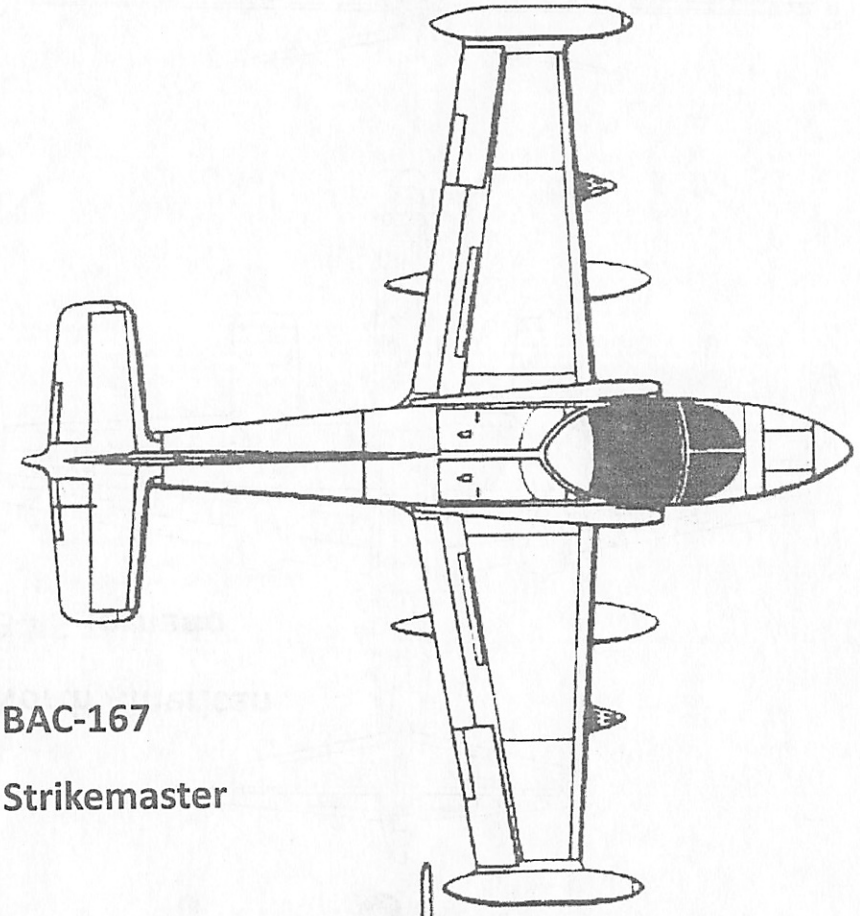
Space Ship

One



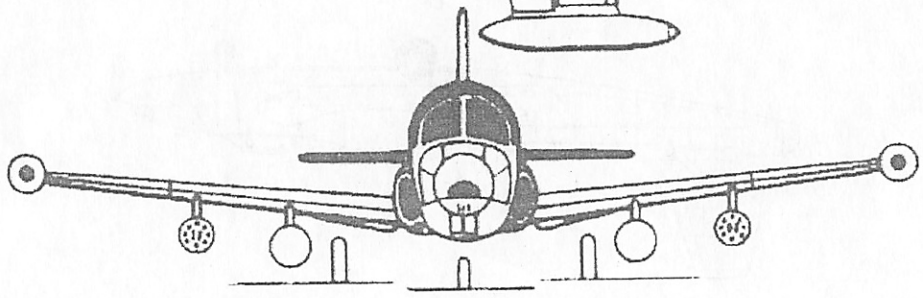
Here's one for the truly adventurous!

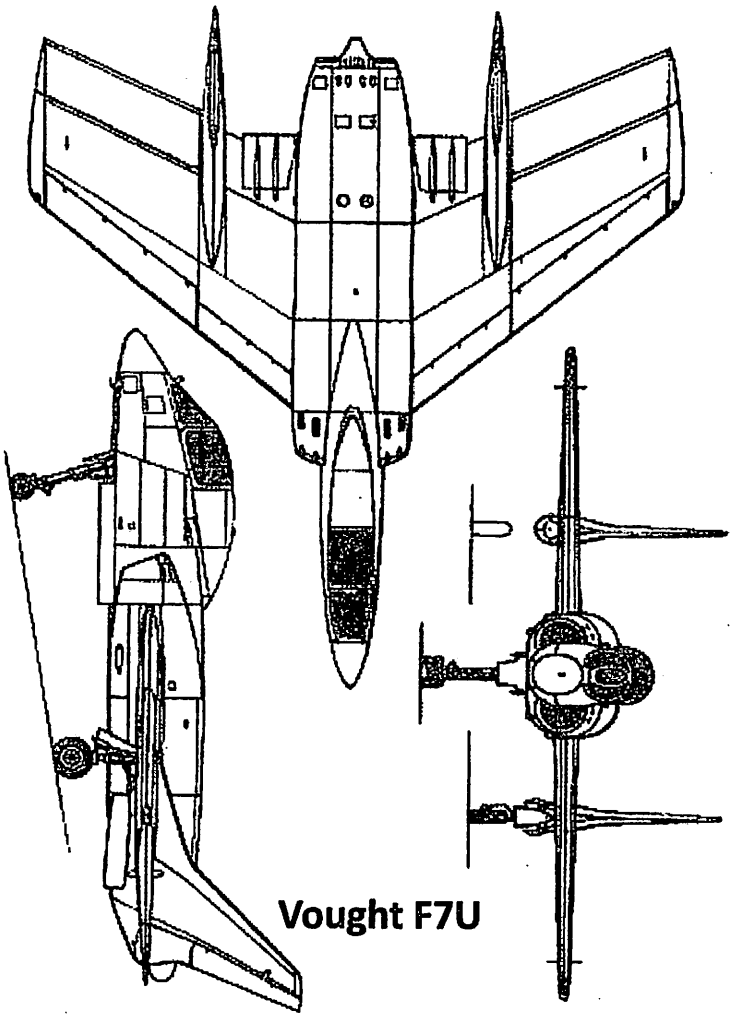




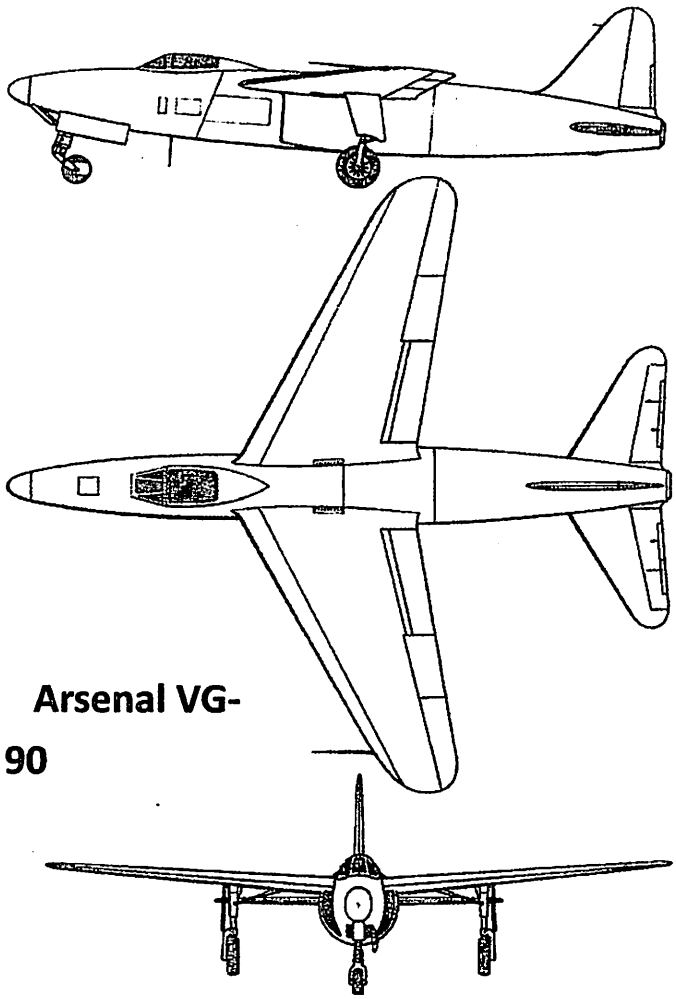
BAC-167

Strikemaster





Vought F7U



Arsenal VG-90

NEWS FLASH !

Shorty's Basement now has new owners. Shorty's has been acquired by George and Pat Bredehoft from Battle Creek, MI. I have known both George and his wife, Pat, for over 10 years. George is a free flight modeler and knows the hobby very well. Both of them are very excited about this new adventure and are looking forward to giving the same quality service all of you have come to expect from Shorty's Basement. 269-339-9795

George will run Shorty's Basement just as it has been run for the past 10 years.

I wish both George and Pat the best of luck and hope all of you will continue to support this cottage industry for *your one stop shop for all of your free flight needs*.

I would also like to thank all of you for all of your well wishes. I have thoroughly enjoyed supplying you with free flight needs and will miss all of you as both friends and customers.

Thank you for 10 wonderful years. **Carole Kane**

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2012 CFFS Contest Events at Lorain County Community College Field

Located at 301 Abbe Rd. I-90 Exit to Rt. 301S
Flight line accessible from main entrance or Hoag Rd., whichever is upwind
10:00 am to 5:00 pm

A. May 20 July 29 Sept 16		**B. June 3 August 12 October 7**	
1. FAC Peanut Scale, Full points		1. FAC Peanut Scale, Full points	
2. FAC High Wing Cabin Peanut		2. FAC High Wing Cabin Peanut	
3. FAC Dime Scale – 2012 rules		3. FAC Dime Scale – 2012 rules	
4. FAC Rubber Scale		4. FAC Rubber Scale	
5. *FAC Embryo Endurance*		5. *FAC Embryo Endurance*	
6. FAC Two Bit O.T. Rubber		6. FAC Two Bit O.T. Rubber	
7. FAC Half Wakefiled		7. FAC Half Wakefiled	
8. FAC Golden Age Combined		8. FAC Golden Age Combined	
9. Earl Stahl Scale *		9. Earl Stahl Scale*	
11. FAC Simplified Scale		10. P-20 Endurance	
12. AMA Hand Launched Glider		11. FAC Simplified Scale	
13. 6" Stick Catapult Glider		12. AMA Hand Launched Glider	
14. FAC Jet Cat Glider		13. 6" Stick Catapult Glider	
18. FAC Goodyear F1 Race Mass Launch	11:30	14. FAC Jet Cat Glider	
15. FAC Greve Race M.L.	12:30	16. FAC Thompson Race M.L.	12:30
16. FAC Thompson M.L.	1:30	18. FAC Goodyear F1 Race M.L.	1:30
19. FAC WW I Peanut Combat M.L.	2:30	21. FAC WW II Peanut Combat M.L.	2:30
20. FAC WW I Combat M.L.	3:30	22. FAC WW II Combat M.L.	3:30

* Earl Stahl Scale - any Earl Stahl scale design, any size. Bring your plan. 3 flight total.

FAC rules apply, with inspection of O.T., Simplified Scale, Embryo, and Dime Scale models prior to first flight. Bring your plan. FAC Pilot's checklist will be used in all non judged (total of three flight & mass launch) events. No size change for 26" max per O.T. plan. Flier must pre-select event for multiple option models. **Mass Launch events will start at posted clock times! Be ready!**

CFFS Special Events

Three events have been designated as "special" to encourage some model building out there. Flier's names will go into a hat for a drawing at the end of the season. Winner gets a $25 gift certificate for hobby supplies. You don't have to win the event to be eligible! Your name goes into the drawing every time you enter one of these events as long as you put up an official flight. The more you enter, the better your chances. This year's events are: **Earl Stahl Scale, Half Wakefield,** and **Jet Catapult Scale Glider.** If you're wondering which model to build next, I hope we've provided some inspiration. So turn off the TV and head to the bench!

Hi Larry CFFS CLUB

Dues of $10.00 for 2012 are due to Mike Zand, Thanks Russ

Crosswinds readers with the **dreaded red X** at issue renewal code #140 or lower can avoid bitter disappointment by sending $20.00 to the address below for another year of Free Flight joy. Mike Zand
5803 East Ash Road
Independence, OH 44131

Russ Brown, 4909 N. Sedgewick , Lyndhurst, OH 44124