

August/September, 1988

THE LEADER IN SPACEMODELING

\$2.50

FLY THE RAVEN RC RG!



Model Rocketry's Longest Publishing, Most Controversial Newsletter!

August/September 1988

Volume 14, Number 5



"A.F.U."

From the album *OU812* by Van Halen

Well, folks, the FAA is on their ass. That's right, just flat on their ass. It seems that the FAA, the faceless Bureaucracy of people who are supposed to keep the skies safe, couldn't find the time in the past three years to act on the NAR's proposal to raise the model rocket weight limit from 1 pound to 3.3 pounds. The NFPA found the time to study, adopt, and incorporate the proposal into their codes. The HIAA found the time to work with the NAR to develop a new safety code with the limits. Even the FAA found time to farm out the proposal to a study group. The study group found that the proposals were reasonable, and recommended that the FAA put the proposals forth for public comment. To date, *(Continued on page 16)*

Credit Where Credit Is Due

QUOTABLE

Fuck 'em if they can't take a joke!
The Enertek PR Department

"Who's responsible for the portion of the current NAR-HIA Safety Code that prohibits the launching of live payloads? Now, I ask you, what kind of pervert goes around launching DEAD animals? That's not scientific, that's sick!"
A concerned citizen from Penrose, Colorado

COVER STORY:

Fly the Raven RC RG! This bird, designed by Bob Parks, is a world class design that is easy enough for the novice RC flyer to start with. Full size plans are included inside! (Ben Roberto photo).

CREDITS:

Cruise Captain and Editor: JD McNeil; Cruise Manager: Matt Steele; First (and Only) Mate: Robyn Steele; Recreation: Chris Pearson; No man is an island: George Cassaway; Live Entertainment: Mr. Maddog; Mess: Chas Russell; Bigger Mess: Vince Huegele; Lifeboats: Chris Johnston, Dan Kafun, Bob Ferrante,

Making Waves: Lee Olyniec, Jason Haynes, Randy Redd, Gary Price; Riding the Waves: Terry Lee, Randy Kelling, Marty Williams; Overboard without a life preserver: J. Fat Miller, Jerry Bovine (I wonder which one will float?); Puking Portside: Wayne Hendricks, Jack Kobzeff, Wasco Schaffer; Spitting Starboard: Heidi Smakula, Mary Roberts, David Lee Roth, G.E. Smith, Larry Chumlea, and Bozo the Clown.

IMPORTANT STUFF

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Publishing Funds: Courtesy North Coast Rocketry
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The RAVEN 150

Article and Drawings by Ben Roberto
Based on designs by Bob Parks and Chris Morgan.

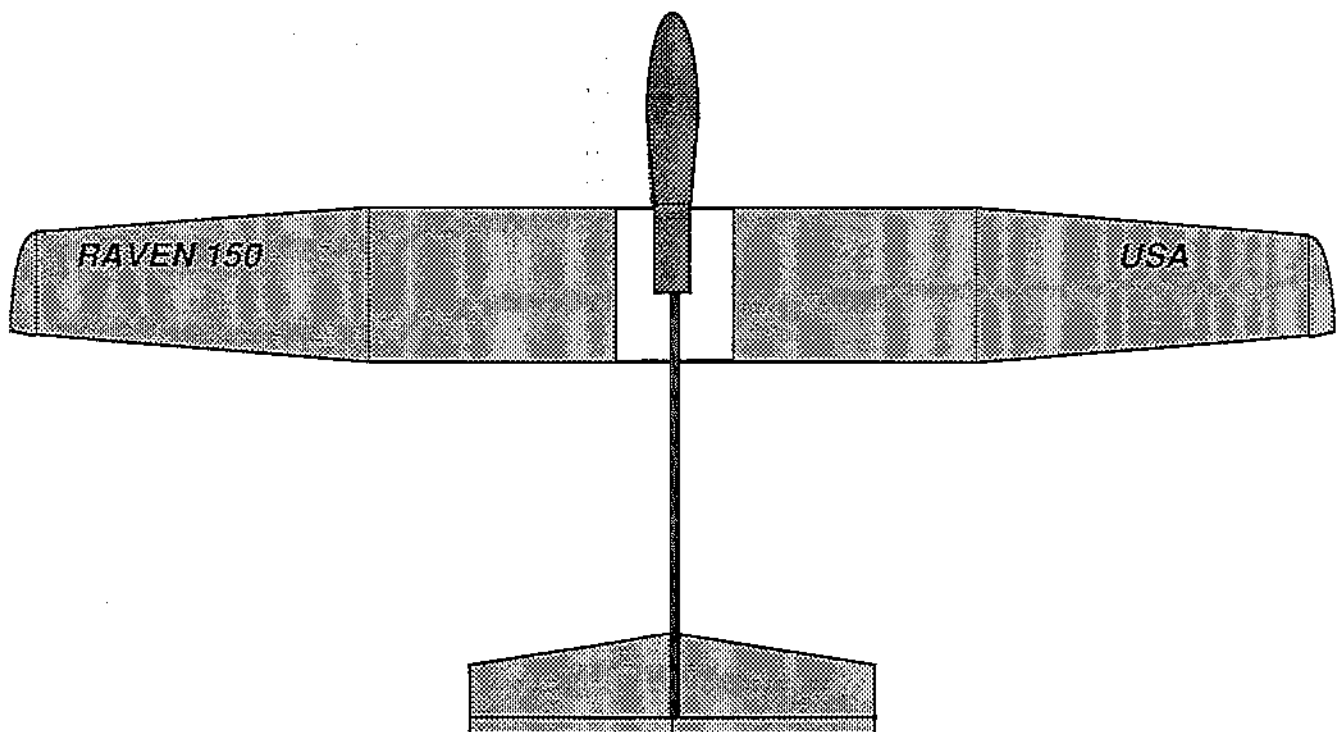
Editor's Note: We've been getting a lot of requests for plans on RC RGs. Needless to say, putting together an article that covers such a task is quite an undertaking. While we do have such a series of articles in the works, they won't be finished until later in the fall. We did get this article from Ben Roberto which provides the basic information for the Raven 150. Due to popular demand, we're running this for the benefit of the advanced modlers out there. For those of you who need more to get started, please be patient; we have something for you, too. Ben explains the fine points as follows:

The airfoil is thinned (to 8%) Eppler 205 airfoil.

The model is extremely easy to fly. The flying I did during the 1987 Internats practice session was the only

flying I had done since the NARAM-28 flyoffs (Well, I did do 4 D12 boosts the day before George Riebesehl and I left for Allentown). Anyway, the model lifts off with neutral controls. As it pitches back, the model requires only a touch of down elevator to get it going vertical (I fly without dual rates or exponential, which will probably bite me one of these days).

The glide CG comes out between the spar location and 50% of the wing cord (I have now built 3 Ravens, with several different combinations of flight packs and they have all come out his way.) The forward CG cuts down on glide efficiency, but I'm not sure by how much. In fact for Eppler-type airfoils, I'm not sure how far back you can bring the CG without screwing up the glide. On a Raven, the forward CG seems to dampen out the control inputs. I have to give a command and wait for a response (like on a Gentle Lady). If you remember, I had the opportunity to fly Phil Barnes' Dark Star at the last flyoffs. The model had a much



quicker response time. It wasn't instantaneous, but it wasn't that slow either. So with a Raven, you need to be ahead of the model (that translates to practice, practice, practice!).

The Raven builds very quickly. But if you try to speed things up too much, you can really screw up. For example, when putting the center section together, you need to have the push rods in place (in the boom and through the spar and shear webs) before gluing the section together. I did this once and it took me about an hour to get them in. With the tail section, most people will try to align it after gluing it on. They hope to be able to shift it into position before the glue sets (you can do this with thick CA). Try this instead: after building the entire tail assembly (stabilizer and vertical fin), glue it to the 3/32 balsa strip (which is shaped for the inside and outside of the boom). Insert the entire assembly into the boom (the 3/32 strip). You can now tweak the tail until it's level with the wings. Then you can hit it with the instant CA. Neat, huh?

The wing rods are made this way: Find some K&S

aluminum tubing that fits within the carbon fiber. More than likely, it'll have some play to it. No problem. Epoxy or Hot Stuff a couple of layers of 0.6oz. fiber glass cloth to the outside of it. Sand it down until it fits snugly within the carbon fiber. For additional strength, you can get the next size down of aluminum tubing and glue it inside the main tube.

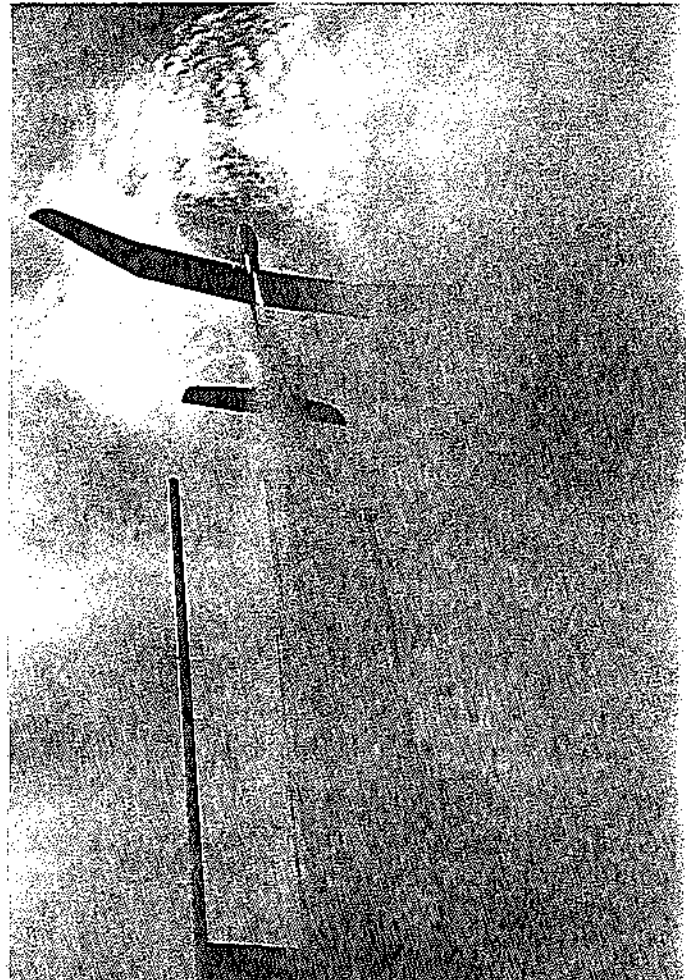
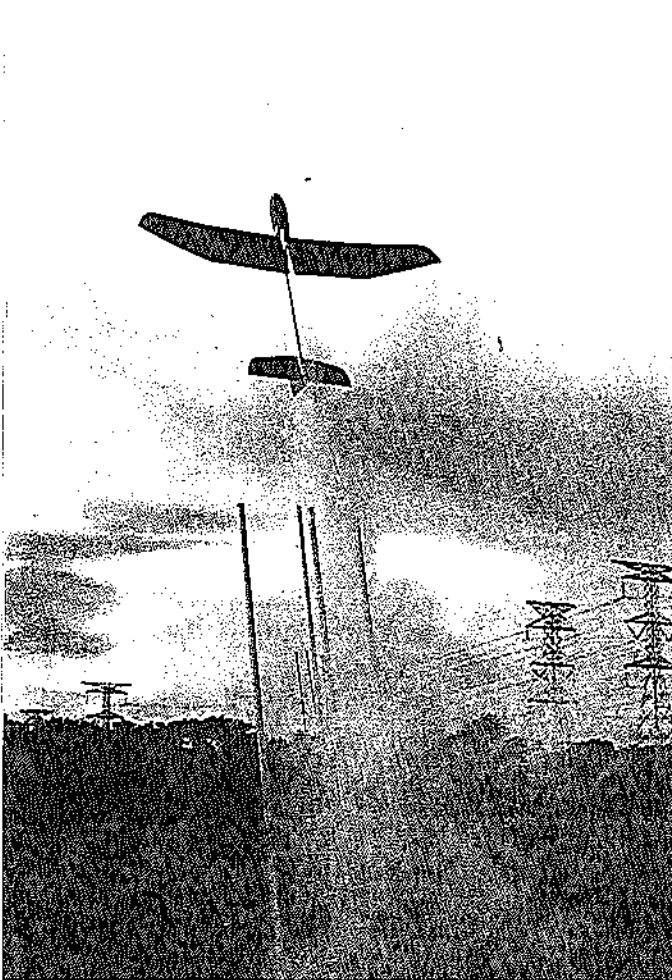
After cutting the parts to the right size, do the following:

- a) Insert the push rods (all 36 in. of it; you can cut the excess off later)
- b) build the center section
- c) build the wings and wing rods
- d) build the tail assembly with the 3/32 balsa fairings, slide it in to the boom, line up the tail with the wing, and add a touch of Hot Stuff, and you're ready to fly (well...not really ready, but real close...).

Oh yeah...covering on the model is Monokote. There is a lighter alternative. It's an iron-on covering from Sig. It's supposed to be half as light as Monokote. It's worth looking into since it takes such a long time to get

Below: Two views of Ben's Raven 150 lifting off.

Note the special tower launcher which is a must for flying these types of birds. Photos by George Riebesehl.



a smooth finish with dope and tissue.

Some of the flight packs I've used were: S22 servos (fastest micro servos around), Tower Hobbies Rx, Futaba 2 Channel Rx (possibly one of the smallest receivers available. Cost around \$50), Royal 1/2A Rx (reliable and cheap), 100 mah and 70 mah battery packs.

S22s are still available. Indy RC has a couple of hundred left at \$17.50 a piece. The servos themselves are discontinued, but they are in stock. The address is:

Indy R/C Sales, Inc.
10620 N. College Ave.
Indianapolis, IN 46280
(317) 846-0766

Order now and avoid the Christmas rush.

Tower Hobbies would be an alternative. I'm not really worried about receivers. Even with the 1991 specs, there's a great enough demand from RC Car

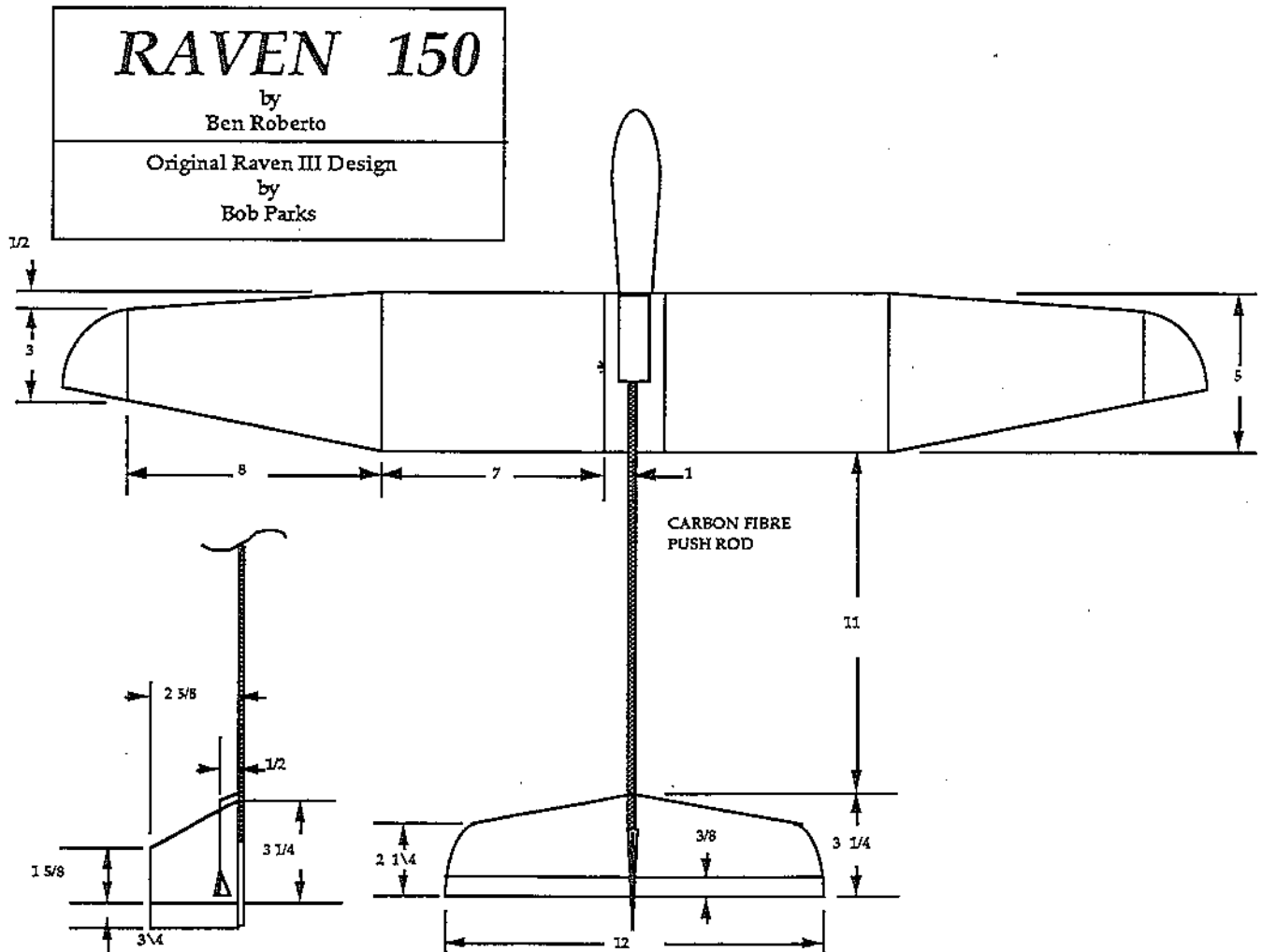
drivers for micro Rx's.

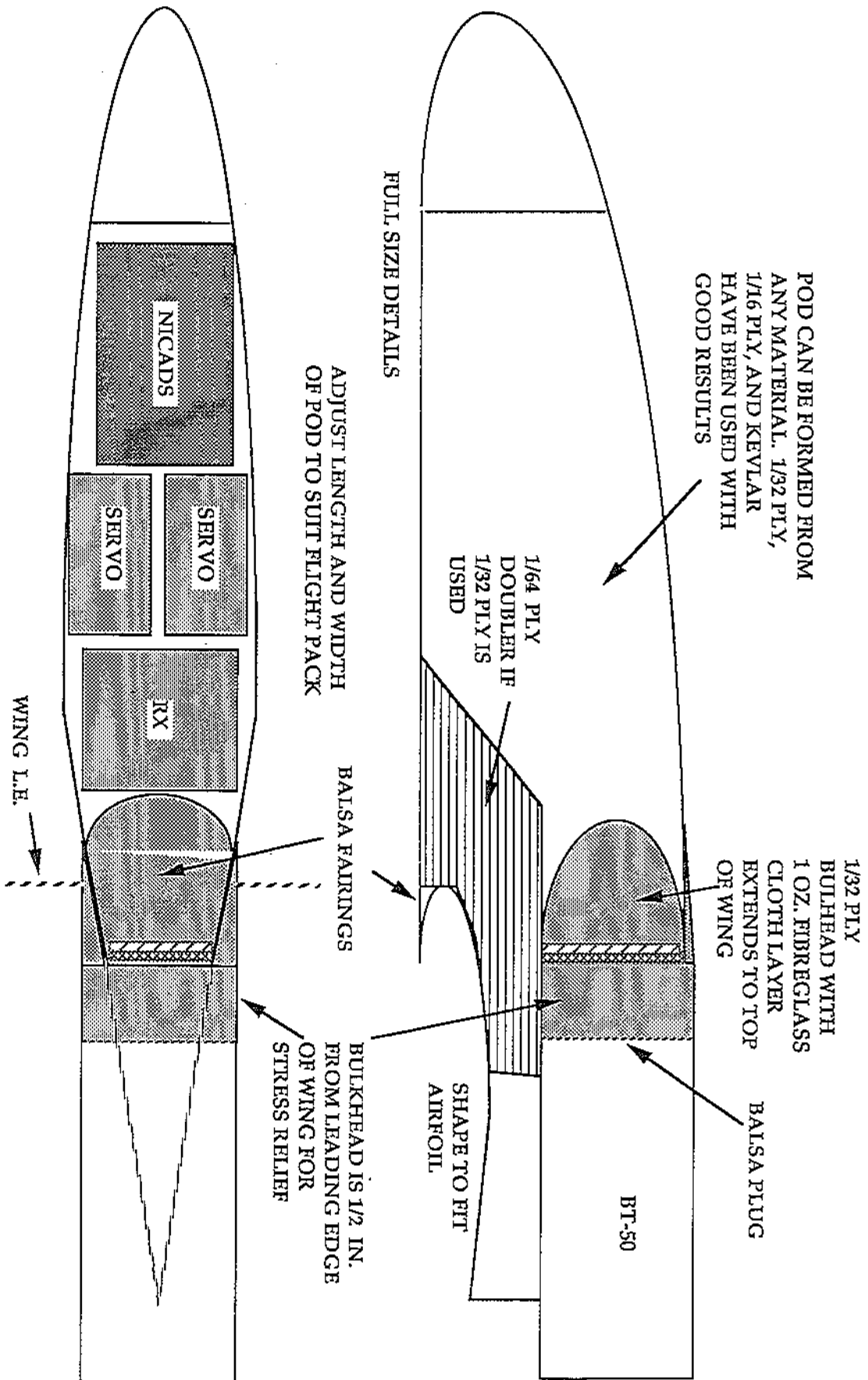
You may have noticed that I didn't mention Cannon stuff. I never liked their micro gear. I had my set-up for a year before I sold it. I got tired of futzing with it. The servos are slow, the Rx's won't work with some different brand Tx's; and as you saw at the practice session, prone to some flakey stuff. Personally I like equipment that's low cost, durable and as long as it doesn't compromise anything else, high in performance (don't we all); meaning you can stick the equipment in the model and forget it's there. The only thing you should have to worry about is piloting and not the equipment falling on you.

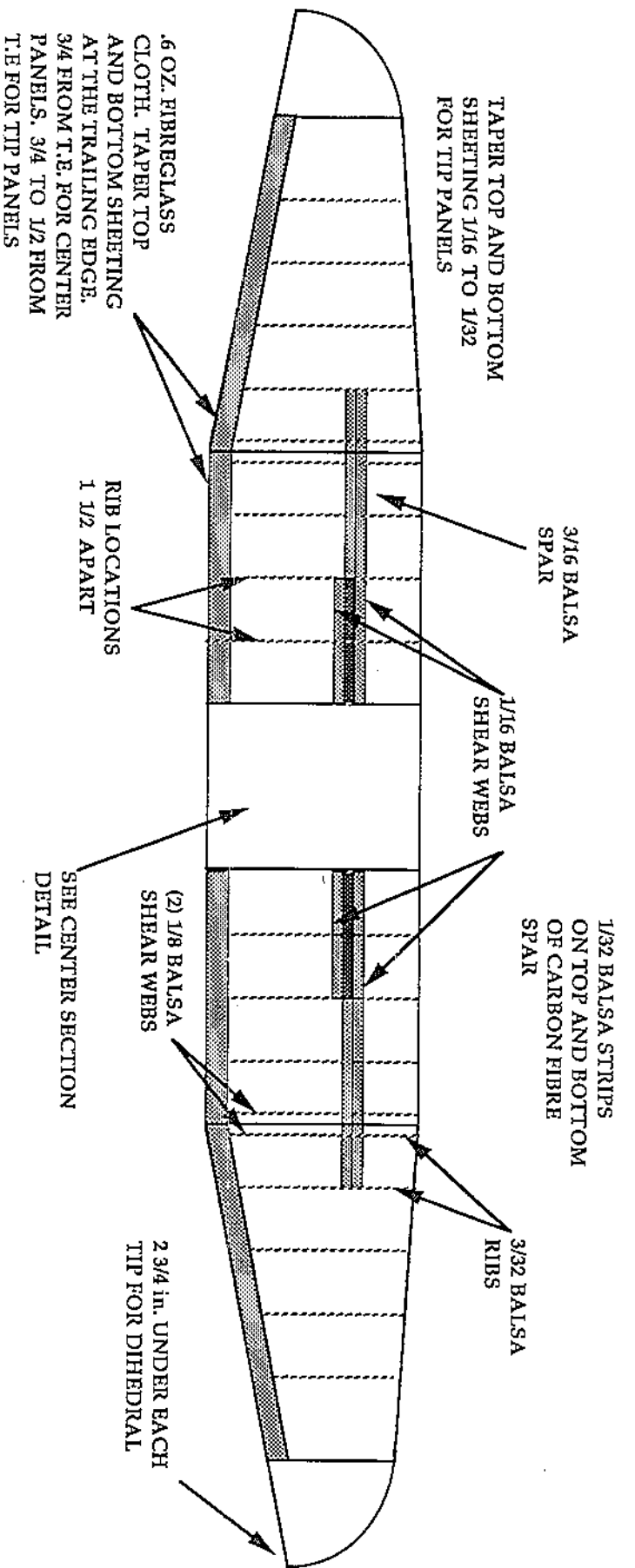
Enough of the soapbox...

That's about it. Good luck flying!

Ben Roberto



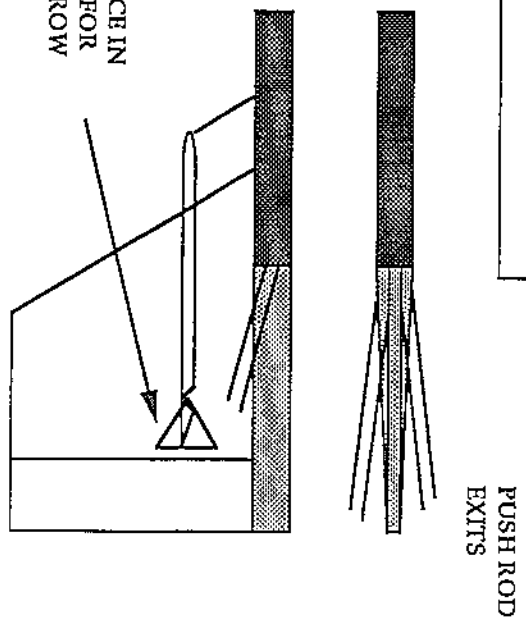




ALL TAIL SURFACES ARE MADE FROM 3/32 BALSA.

STABILIZER IS SHAPED AS ONE PIECE, CUT APART, AND THEN GLUED TO VERTICAL FIN

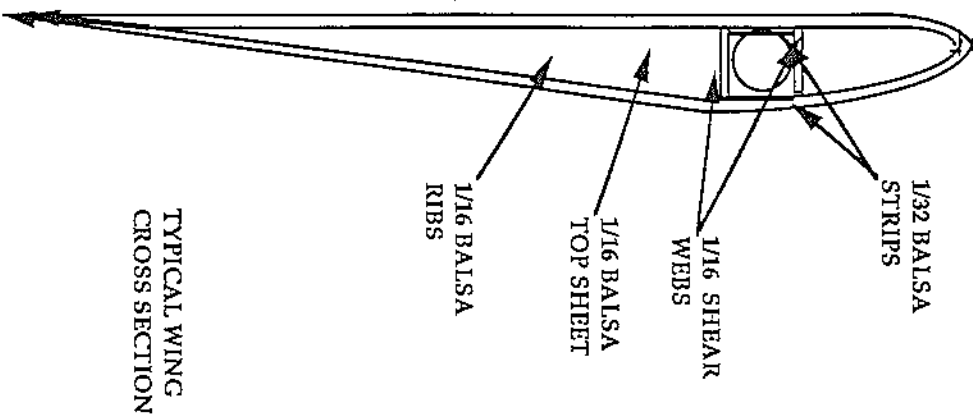
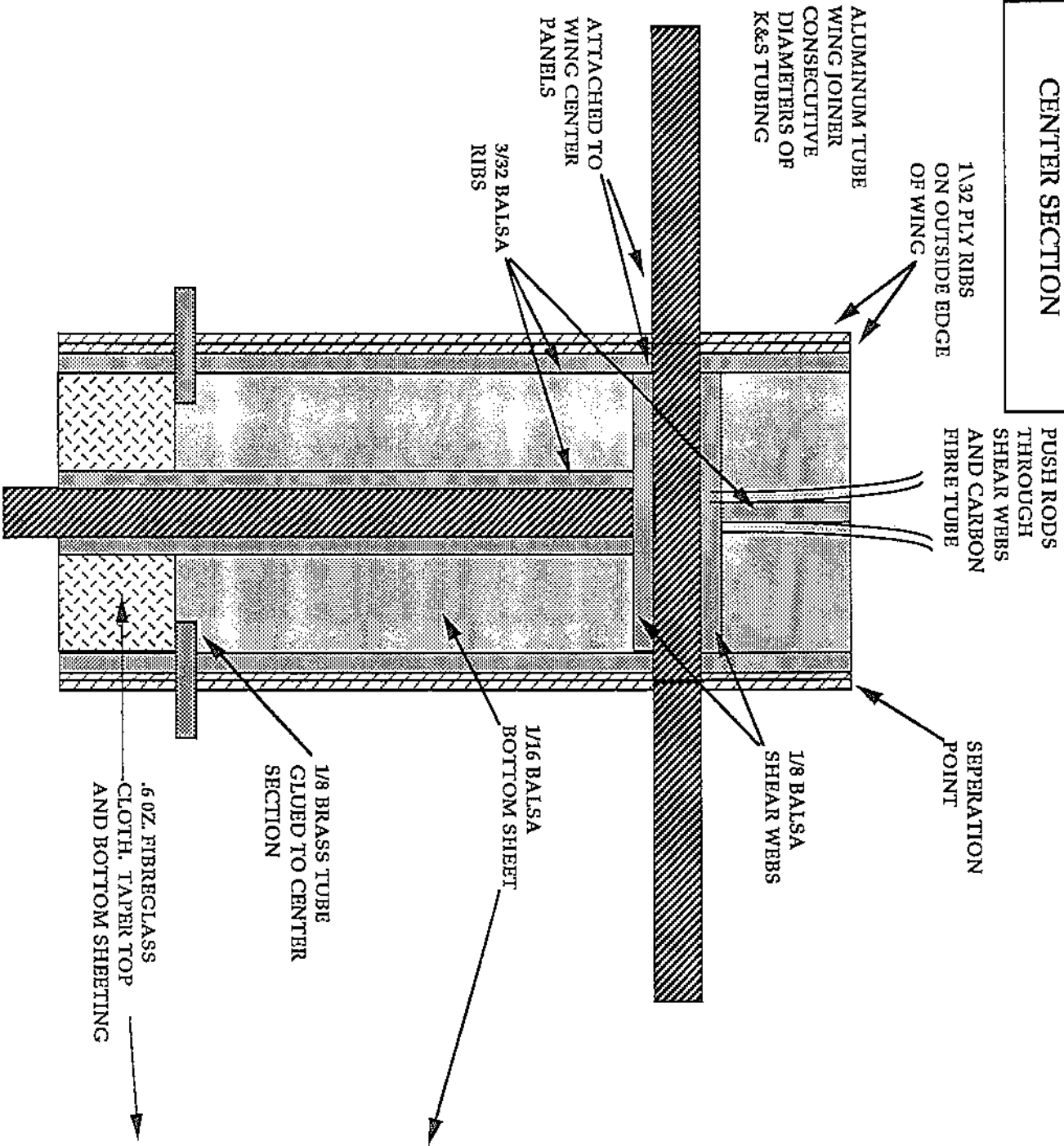
3/32 BALSA STRIP SHAPED TO FIT INSIDE CARBON FIBRE TUBE AND THEN SHAPED TO OUTSIDE DIAMETER OF TUBE WITH SCRAP BALSA.



CUT CLEARANCE IN VERTICAL FIN FOR ELEVATOR THROW

RAVEN WING

CENTER SECTION



Everything You Wanted to Know About Ms. Launch Rack*

*but didn't have the nerve to ask.

Hi, y'all, I'm Barbie Mattel, MS. Launch Rack '88... and welcome to my first starring role in SNOAR NEWS! I'm really excited about showing you all I can (giggle)...

Being chosen Ms. Launch Rack 88 by the SNOAR NEWS staff is quite an honor... and quite a responsibility, too.... Such as playing an integral part of the newsletter's post-production operation. I PERSONALLY lick every issue's postage stamps.

As a viable member of the SNOAR organization, I'm expected to perform valuable community services such as lecturing to various youth groups, churches, schools, and civic organizations on the educational and recreational aspects of spacemodeling.

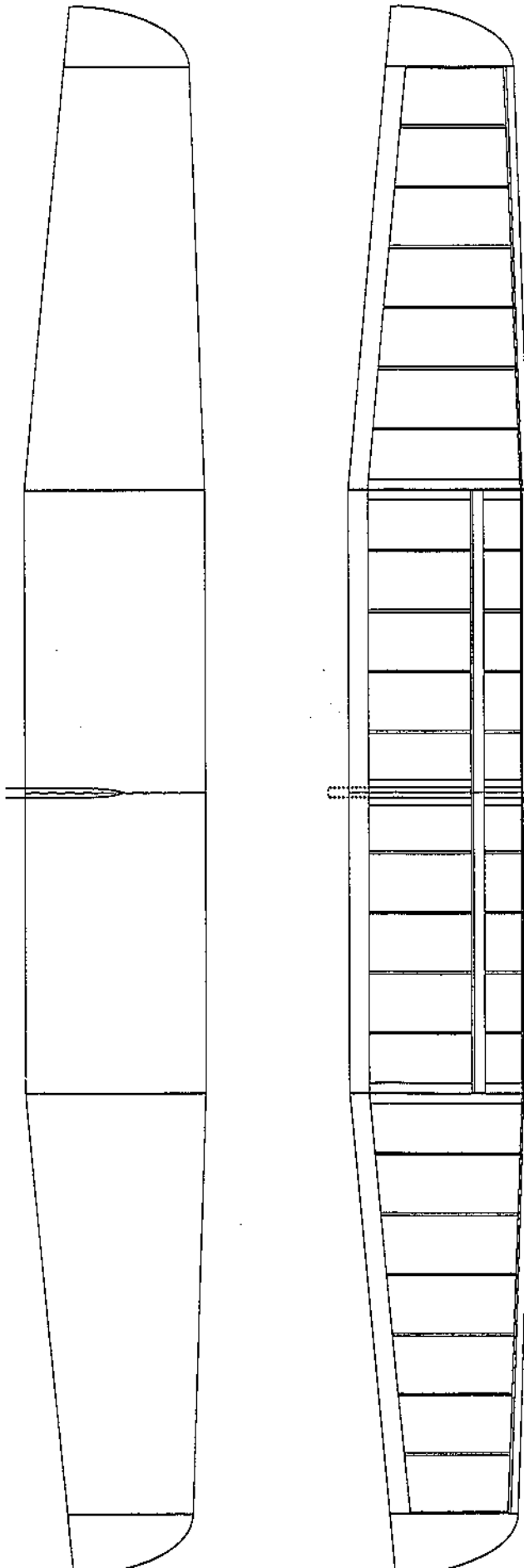
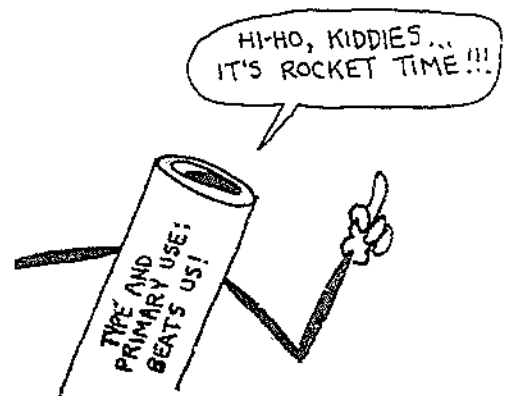
I also serve as an important part of SNOAR's range crew. In my very first centerfold ever, you can see me helping out in a variety of ways. I particularly like the BIG ones that SNOAR members have!

But most of all, I like getting together with all of you SNOAR NEWS readers and having a good time -- If you know what I mean, and I think you KNOW what I mean.

Look for me in the next exciting issue of SNOAR NEWS as I help Tony put together the SS-28 Spotter Spot Landing model. I know, it's too late for that big NARAM event, but y'all do OK hittin' that spot without MY help, I'm sure.

That's all for now! Let's get together REAL soon, Okay?

Mr. Ka-boom sez:







Build the MINI ROTAROC

by George Gossaway

Building the Rotaroc

Helicopter models are very critical as to weight for best performance. This includes areas of material selection, assembly, and finishing. Keep in mind the importance of low weight throughout. Proper assembly is also important so the model can perform reliably and efficiently. This is not to say these models are too hard to build or too critical, just that the better they are built the better they will fly. For first-time builders, sturdier models (less fragile rotors) without some of the extra performance tricks will be just fine for learning what to possibly improve on the next model.

Take special care in selection of balsa for the rotors. The wood must be somewhat stiff so that it will not bow outward too much when folded for boost. Stiff wood tends to be heavy, but careful selection of the right sheet can pay off well. Medium to light will work if it is stiff enough. The wood for the fins can be light balsa.

Rotor blades & fins: The plans page shows how to mark out the three rotor blades and how to sand the trailing edges before cutting all three apart from each other. Since one is flipped around, the balsa should be of uniform density, otherwise the blades will not be equally balanced. Unlike a real helicopter, these rotors do not have to be truly balanced, but the more wobble the poorer the performance. Fins are non-critical, can be light wood with just rounded edges, bare balsa or one coat of clear dope.

After final sanding to airfoil shape and finish sanding, apply one or two coats of thinned clear dope (not necessary, especially if you have little experience with dope finishes). Do not use any paint, paint adds too much weight. Any coloring should be done by use of magic marker, on bottom of rotor blades and fins (Black seems best overall, with some red or orange for rotor blade tips - after landing one blade always sticks straight up so a red tip acts as a locator "flag"). If the regular perpendicular hinge mount is used, the rotor blades must have some downward angle in them in order to rotate. This must be achieved by warping a span-wise twist into the rotors so that the tips are angled downwards (angle of attack). Not a lot is required, but enough to make it rotate properly. If skewed hinges are used, either this twist is not required or some slight positive (up) twist may be added for best efficiency (more like a reversed propeller: greatest down angle at root, least at the tip)

Main Body: Use a 14.5" length of BT-5 for the main

body. Mark off the hinge line location, and attach the hinge halves (Goldberg/Klett RK-2 model plane hinges, hinge pins are removable). Note that the skewed hinge option is more efficient than the regular perpendicular hinge, a jig can help ensure the angles for all are the same (and most importantly, in the same direction!). Tack glue each hinge half in place with cyanoacrylate glue (CA), then when all seems correct apply more CA to secure the hinge, taking care not to ruin the pivot area of the hinge with glue over-runs. Wrap thread around the hinge halves to secure them all together as a unit, applying a thin type of CA to bond the thread to itself and the hinges. Again, be sure not to let glue run where it will ruin the hinge action.

Once hinge halves are mounted, mark off fin locations. Make sure the fins are exactly in between the rotors when folded, otherwise the blades can never fold properly. Glue on fins using CA glue, adding one coat of Titebond for a fillet if necessary.

Attaching Rotors: Locate and mark which ends of the rotors are the root. The root ends should all correspond with the intended direction of rotation of the airfoil and skewed hinge angle (if hinges are skewed). Write a number of 1, 2, or 3 near each hinge half on the main body. Write similar numbers on rotors. Apply centering marks onto rotor root to line up with hinge half. Use a hinge pin to attach a hinge half to one of the hinge halves on the main body. Place a drop of thick CA on the hinge, not too close to the pivot area. With the tip end of the rotor blade lined up between the two fins at the rear, move the root end of the rotor so it is aligned atop the hinge, and carefully put into place. The rotor is now tack-glued to the hinge. Check for proper alignment. When satisfied, carefully remove the hinge pin and then remove the rotor (with hinge half still tack-glued in place) from the main body. Now thin CA glue can be applied to the hinge so it can seep between the hinge and balsa to form a good bond (No other glues are suitable for attaching these hinges). As always, be sure glue does not seep into the pivot area of the hinge. Repeat this method for attaching the hinges to the other rotor blades. Once all are done, reattach using the hinge pins and according to the corresponding hinge and rotor numbers.

Final details: Cut out vent slot to vent ejection charge, insert burned out engine casing inside tube so it will not crush during cutting. Make sure it is in line with a fin, so the venting cannot melt a rubber band. Make two small holes in the main body 2.25" from the bottom for the burning elastic thread to run through

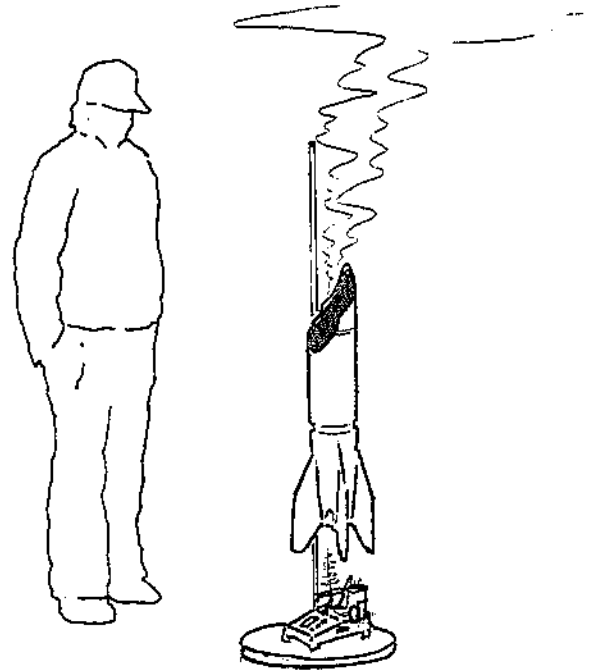
(only big enough for that, too large causes excessive burn damage to rotors). Give bottom areas of rotors exposed to those two holes a coating of CA glue for about a 1/2" radius from the hole locations, the CA will prevent or reduce any burning or charring.

Glue nose cone in place. Cut out and glue in place the balsa dihedral angle supports/rubber band standoffs and split launch lug pieces (split lug pieces act as guides to hold rubber bands in place). Insert and glue into place pins or offset head model railroad spikes to hold the ends of the rubber bands (pin or spike in each rotor support and on nose cone for each rotor location). Attach rubber band to deploy each rotor. The tension should be taut enough to deploy the rotors even when the model is moving forward. Pin locations on nose cone or size of rubber bands may have to be changed for proper deployment strength without being too strong.

The dihedral for the mini-Rotaroc should be about 4 inches (from hinge location to tip of rotors). If too little, shave off some of the dihedral angle supports. If too much, glue on small shims to reduce dihedral.

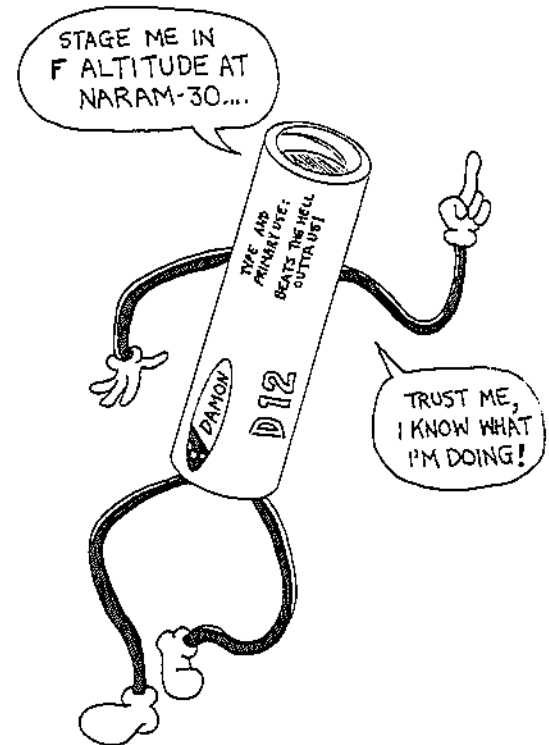
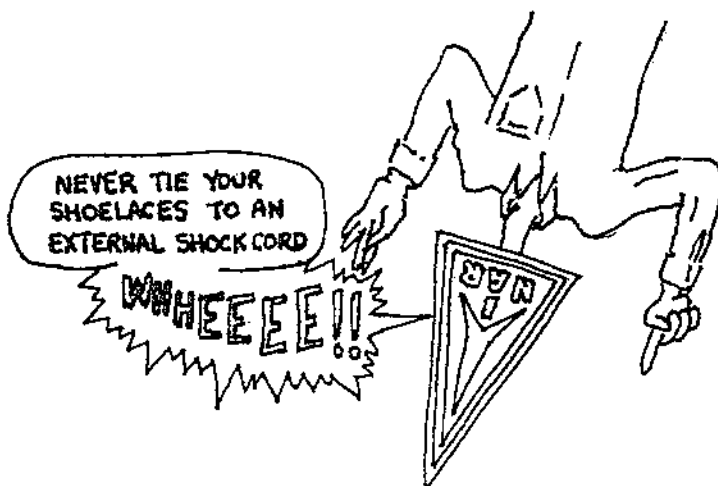
Flying the Rotaroc

The engine is installed by friction fit using tape. There is no engine block (if it is loose enough to slide forward it is loose enough to kick out). The engine must be installed before rotors are tied closed, because the only way the body can be grasped for pushing in the engine would be by the rotors and fins, something would probably break. With blades open, the regular BT-5 body can be held. See plans page 2 for how to tie the rotors closed. Use of elastic thread is highly recommended, as it burns fairly easily and best of all will snap free of the rotors once it burns in two. It helps to have a loop of thin wire or other tool to act as a needle to pull the thread through the two small holes.



"OOOH-KAY... So maybe model rocketry ISN'T ready for laser ignition."

Mr. Association Head Says:



Mini-ROTAROC

Design & Assembly

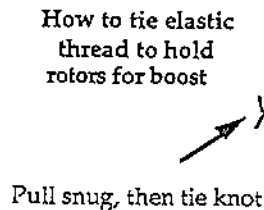
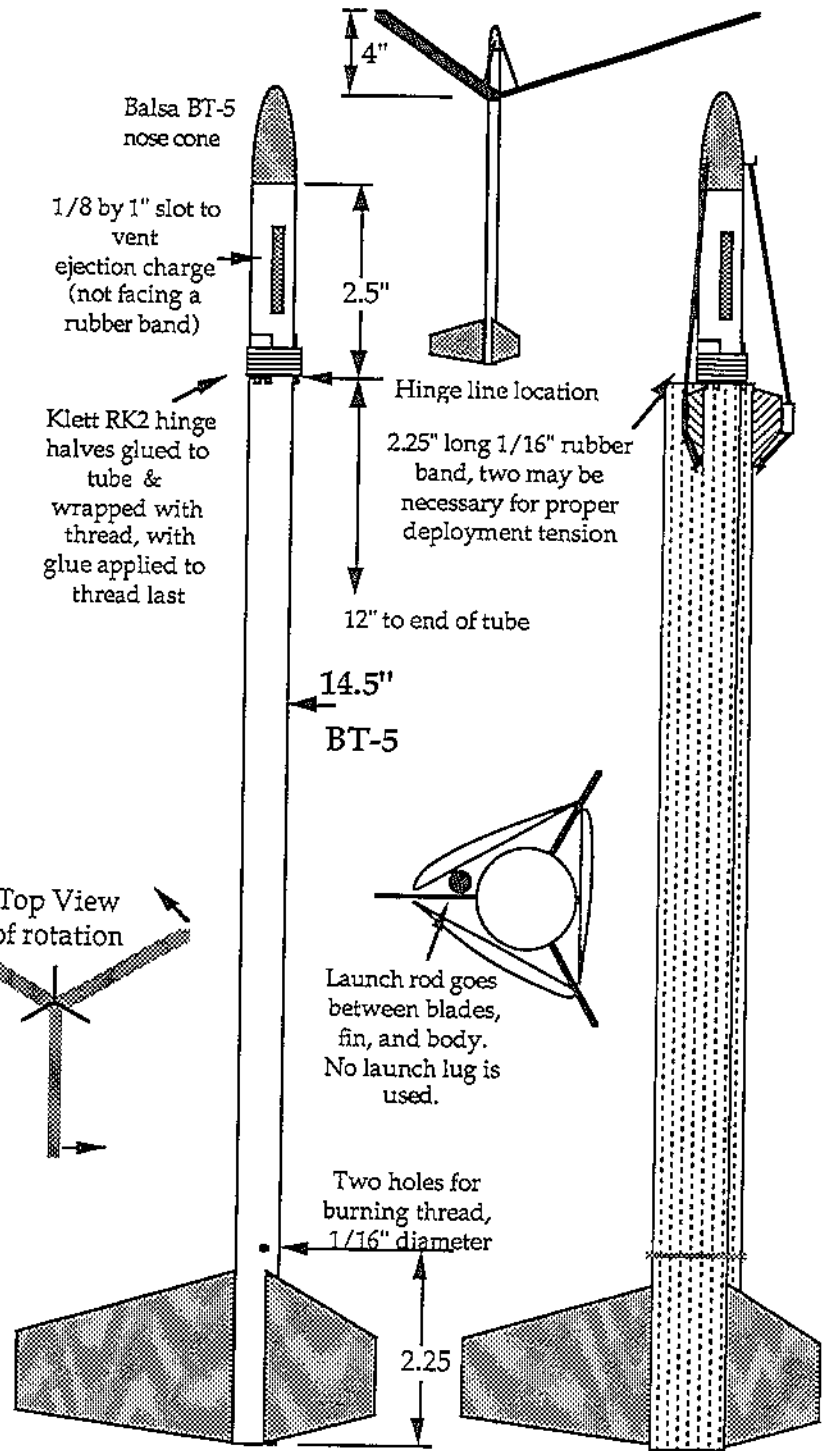
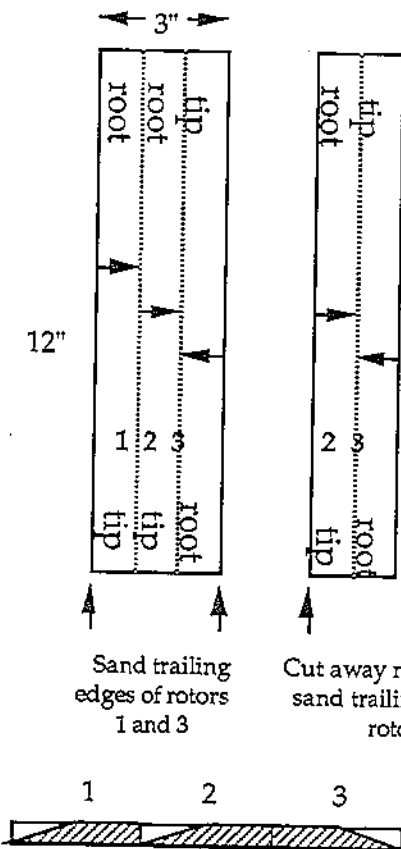
Drawings show model which would rotate counter-clockwise as viewed from above.

PARTS: light 1/16" balsa (fins & rotor supports), Med-light stiff 1/16" balsa (rotors), 14.5" BT-5, BT-5 nose cone, Klett RK2 model plane hinges (3), pins or model railroad spikes, 1/16" by 2.25" rubber bands.

Rotors are 1" wide (chord), 12" long. Made from medium-light 1/16" balsa. Balsa should be somewhat stiff so it will not bow outward much when folded for boost.

Rotors are fragile and easy to damage or break while sanding the trailing edge. Below is how to sand the trailing edge of all rotors before cutting out from balsa sheet.

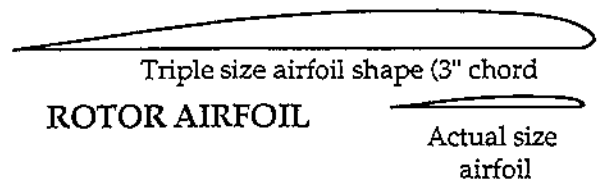
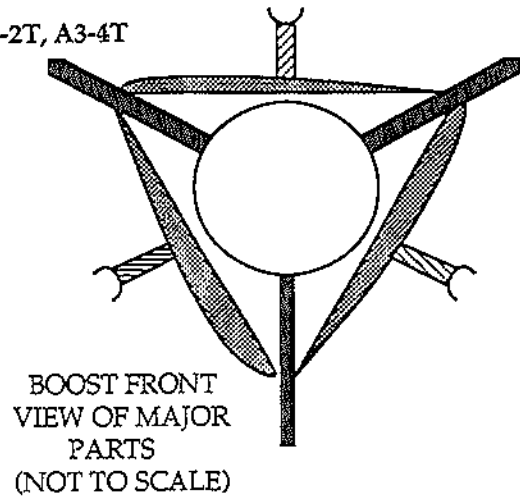
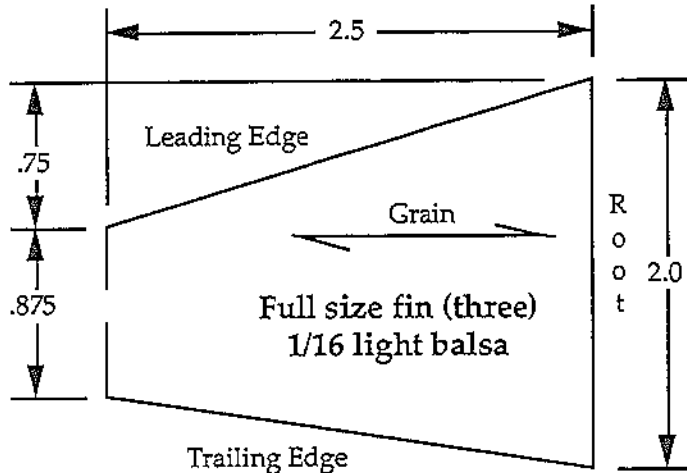
Middle arrows point in direction of leading edge. Top view for models rotating counter-clockwise



Mini-ROTAROC

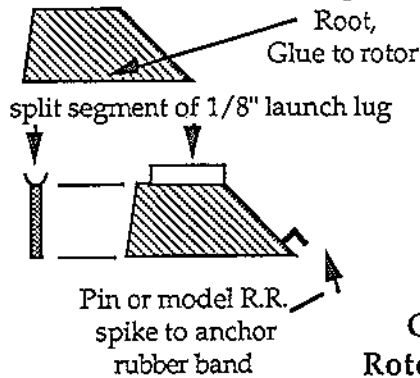
Full size templates & details

Power: 1/2A3-2T, A3-2T, A3-4T



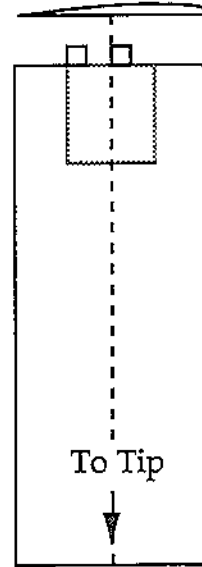
Full size rubber band standoff & dihedral angle support

(3 from 1/16" balsa, note grain)



Perpendicular hinge mount

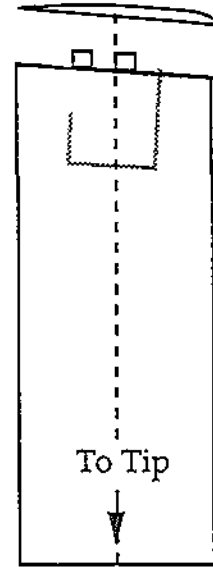
Blade flat at root, must be angled down out towards tip to rotate



Down angle achieved by twisting outer portion of blade

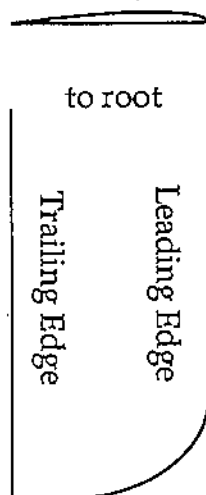
New Skewed hinge mount

Blade angled at root, will rotate fine without any additional work.



Twist tip of blade up nearly horizontal for more efficiency, but will work OK if blade is same angle all across

Optional Rotor tip shape (Full size, top view)



Construction:

For best performance, build model carefully so that parts are not grossly out of alignment and so it will deploy and rotate properly.

Keep model lightweight in selection of parts, wood, and in construction. Use Cyanoacrylate glue.

For finish, use only 1 coat of thinned clear dope on fins and nose cone, 1-2 coats of clear thin dope on rotors. Do not use any paint. For coloring, use magic marker.

From Your Sometimes Sober Editors

(Continued from Page 2)



the FAA has failed to do so.

This lack of action on the part of the FAA was attacked by G. Harry Stine in September, 1987. Say what you will about Harry

(and the pages of SNOAR NEWS have said a lot in the past), he carries a lot of clout with the big wheels in Washington. He has been instrumental in working behind the scenes to get the new limits through various organizations. But Harry finally ran into a brick wall with the FAA, in particular, a Mr. David L. Bennett, the Manager of the Airspace and Air Traffic Law Branch at FAA HQ. The FAA claims it is very busy, since Congress has mandated a number of actions for the FAA to do, and imposed deadlines. I guess Congress is already familiar with the fact that the FAA won't do anything without a little prodding.

Matt has tried to get a waiver for NARAM-30 from his local FAA office with no luck. Because of one pencil neck government employee who won't do his job as a public servant, NARAM-30 will not be able to fly model rockets larger than one pound.

We're talking about going from 1 pound to 3.3 pounds, folks! Despite Matt's national stature, our unprecedented safety record, and the FAA's own consultant saying there is no problem, the local boys just couldn't do it. Like there were problems with the 1 pound models to start with.

There is a flip side to this, though. It give us extra ammunition to go to the FAA through our locally elected representatives and say that the FAA is not doing their job.

This fall, a new offensive will take place to try and get the FAA moving. The NAR will be asking its members to push the FAA and Congressmen into action with a letter writing campaign. SNOAR NEWS is going to make it easy for you in a future issue, with a pull out sheet that you will simply mail to the FAA and your congressmen. Sharpen your pencils, folks. It's time to kick some bureaucrat's butt into gear!

JD McNeil

NAR TOP COMPETITORS

FINAL PRE-NARAM, 1988

	NAR#	SEC#	PTS	WF
A Division				
1 DON LINDER	35892	117	5,946	12
2 JEAN LA VALLEE	39244	471	5,168	12
3 WILLIAM MOSER	38831	459	4,936	12
4 ANDREW LINDER	43406	117	4,731	12
5 PATRICK BARRETT	43642	205	4,124	11
6 CHRIS WEAVER	41889	203	3,886	12
7 MATTHEW SIAS	43745	403	3,512	12
8 MARSHALL GOTTUNG	43234	471	3,312	12
9 SAMANTHA MOSER	40761	459	3,032	12
10 JOEL LEE BURGESS	36016	203	2,945	12
B Division				
1 TIM BARKLAGE	44211	475	5,794	12
2 MARTY WILLIAMS	35301	403	5,484	12
3 LEE OLYNIEC	35214	403	3,496	12
4 JASON HAYNES	43119	403	1,958	10
5 KATHYKMETZ	44761	403	1,832	6
6 UPTON CATHERINE	40790	475	1,816	11
7 JAMIE EVENSON	36669	427	1,194	3
8 LARRY LABOND	39976	463	924	6
9 PATTI EVENSON	PEND	IND	672	3
10 DREW GRAY	38856	473	648	4
C Division				
1 DAN DOMINA	50570	205	5,086	12
2 DONALD LINDER	35893	117	4,935	12
3 WAYNE HENDRICKS	17818	403	4,203	12
4 JIM SEXTON	35936	461	3,862	10
5 SCOTT HUNSICKER	26555	480	3,418	12
6 ROGER WILFONG	36404	463	3,104	11
7 TRIP BARBER	4322	205	2,878	12
8 DAVID MOSER	28979	459	2,725	12
9 ALVIN NIENAST	28820	369	2,724	7
10 JIM ZINGLER	28818	369	2,593	7
Teams				
1 CRUNCH BIRDS	471	471	5,686	12
2 ZUNOFARK	48	403	4,870	12
3 DUAL EGGLOFTERS	2	117	4,423	12
4 LEE-PURCELL	241	203	4,362	12
5 HIGHER STRAIGHTS	343	475	4,252	9
6 JANOVANDPAVLOV	251	IND	4,244	12
7 IRON BANANA	588	117	3,105	12
8 BROWN & BROWN	7	205	2,031	12
9 J&P SRB'S	5	471	2,002	10
10 ACE DISASTER CO	26	308	1,572	11
Sections				
1 HARA		403	34,270	12
2 NIRA		117	24,765	12
3 NOVAAR		205	22,988	12
4 VIKINGS		203	21,543	12
5 ASTRE		471	20,916	12
6 FORT WORTH		480	17,036	12
7 SMOKEY MOUNTAIN		486	16,979	12
8 RED STICK ROCKET SOCIETY	475		16,354	11
9 HUVERS		463	9,068	11
10 CENTRAL MINNESOTA		477	7,210	9

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By using EasyPlex on CompuServe, you can contact
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CompuServe ID Numbers
Chris Pearson - 71401,2370
Matt Steele - 73270,2745

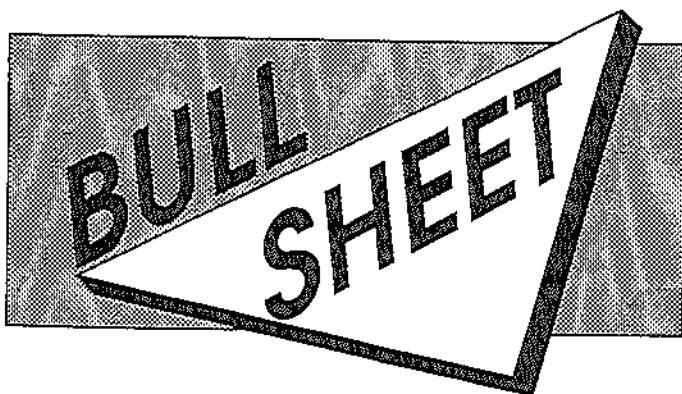
CompuServe is accessed daily by NCR, and your messages will be given a quick reply by either Chris or Matt!

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and
injection molded nose cones for our bigger kits!!!**



The hobby has lost one of its founding fathers. NAR #1, Orville H. Carlisle, passed away on August 1st, 1988. Mr. Carlisle is the father of model rocketry. In fact, he introduced a young range safety officer at White Sands to the hobby in 1957. This safety officer, of course, was Harry Stine who a year later founded the NAR and the first model rocket company. Millions upon millions of modelers owe a debt of gratitude to Mr. Carlisle. An equal number can be thankful that he introduced safe sport rocketry for hobby consumers of all ages.

NAR membership has leveled off at about 4700 members, and it looks doubtful that it will reach the 5000 mark by the end of the year. The growth due to the Estes kit stuffer program has finally slowed down, thus resulting in less annual growth. The good sign about the membership figures is that the Senior membership is picking up.

Also certified by Enertek, but not reported in the last issue, was the G40 and G80. The Aerotech F25 will also be certified by 9/19/88. The Smoky Sam series was not sent by Scott Dixon to Standards and Testing as of press time and will not be certified for contest use at NARAM-30. Because of the constant delays in getting motors out of Vulcan, North Coast is considering pulling out and selling strictly Aerotech motors. More on this as it develops.

FSI has finally sent in their A, B, and C motors for certification. I know you've been holding your breath on that one.

Latest word has Enertek shipments slipped to late October. I knew you were holding your breath on that one, too.

And lastly, it seems that everyone is getting a new job. At least Pat Miller, Pat McCarthy, Claude Greenlee, JD McNeil, and Ed Muccio are changing positions to make the big bucks. Send some \$\$\$ this way, guys.

Testor's Rocket Building Supplies

A Review
by Ron and Burt Roes

We stumbled across Testor's Rocket Building Supplies while checking out the Estes kit selection at Circus World (a toy store) in the mall. And we couldn't wait to put 'em to the test.

Here's what we got for our \$6.95-plus-tax: a bottle of sanding sealer/primer, a bottle of thinner, a disposable hobby knife, a small brush, a tube of contour body putty, a tube of glue, an assortment of sanding films, a flimsy plastic storage tray, and some very basic instructions.

Perhaps the most interesting of these new products is the combination sanding sealer/primer. We were initially skeptical of such a compound, but it proved itself equal to (if not superior to) regular sanding sealer on balsa, plywood, and paper. Testor's can also be used on most types of rigid plastic, which is a big plus in their favor.

The sealer/primer goes on a bit thick when used straight from the bottle (as recommended by Testor's for the first coat), but when thinned to about 90% full strength, it brushes on smoothly and sands to a nice finish in only four coats on balsa. (Plywood and paper require even less filler, of course.)

It's also good as a primer coat; but we still prefer spray paint for that application.

The sanding films are similar to Flex-I-Grit and are much better than conventional sandpaper. Although the sheets are a bit small for our tastes (Why can't we get this stuff in 8 1/2 X 11 inch sheets?!), they are serviceable. We especially liked the 600 grit for finishing work.

Unfortunately, the rest of the supplies weren't all that useful. The knife is sharp and has a good "feel", but how long can you use just one blade? The body putty would probably be more useful for plastic model applications, but it could be handy for repairs. And the glue is better suited to purely wood construction, such as small gliders.

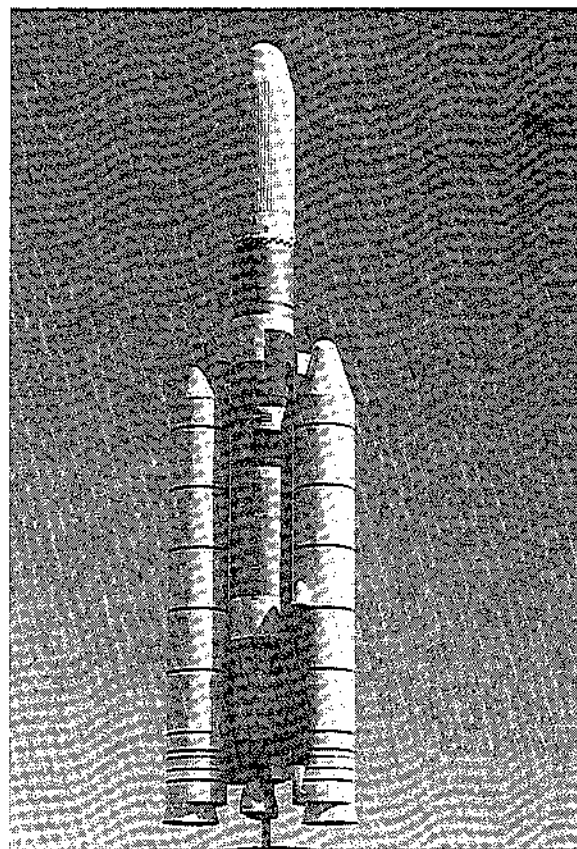
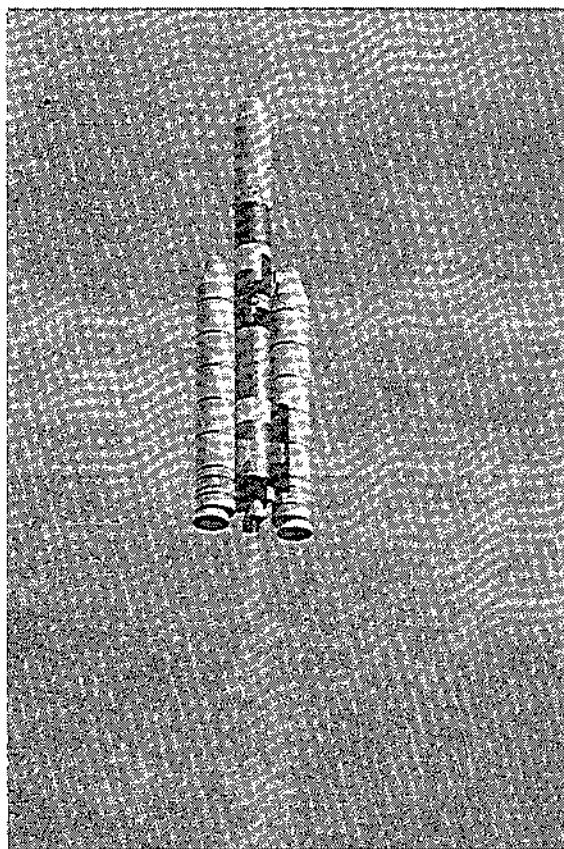
We suggest that prospective Testor's customers purchase the sealer/primer, the thinner, and the sanding films separately. We think you'll like 'em.

Too Good to Pass Up!



Above: What sort of man reads SNOAR NEWS? Why "Ranger Russell", that's who! the only way real men can put up with an overseas combat tour is to relax with the latest issue.

Below: Marc McReynolds's Titan Sport Scale model. Alas, it pranged at NARAM-29.



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