MASA PLANET
The Official Newsletter of the Minnesota Amateur Spacemodeler Association
May - June 2009
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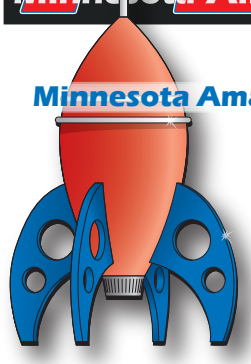
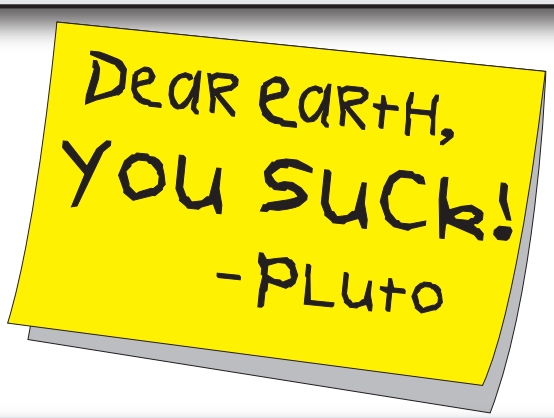


MASA
Minnesota Amateur Spacemodeler Association
Established January 1998
NAR Section 576
2006 NAR Medium Section of the Year
2007 NAR Medium Section of the Year
Host of NARCON 2007
Host of NARCON 2008
2008 LAC Newsletter Award Recipient

Planet Table of Contents



Contributors to this issue of the MASA Planet....

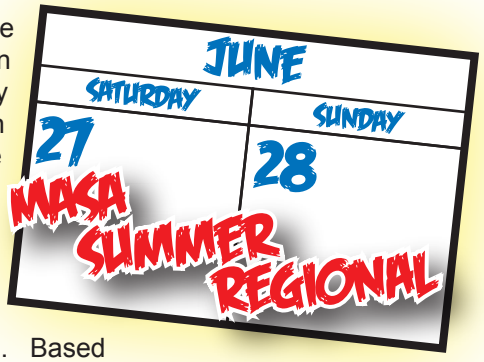
- Ted Cochran
- Alan Estenson
- Art Gibbens
- Scott Gleason
- Ray King
- Carol Marple
- Lyle Merdan
- Glen Overby
- Jeff Taylor

Thank You

To contribute pictures, stories, build reviews, or just about anything, email to jeff.taylor@mn-rocketry.net

MASA to Host 2-Day Regional NAR Event

Mark your calendars for Saturday and Sunday, June 27 and 28. MASA is hosting a NAR Summer Regional Contest. This two-day event is MASA's first NAR Regional, and is being spearheaded by MASA member Mike Erpelding.



The contest will be held in conjunction with the monthly MASA sport launch on Saturday. The contest will be held at the Nowthen Sod Farm. Our waiver allows flights to 4,500 feet AGL (above ground level). Based on field size and distances from occupied buildings, the maximum practical flight altitude is 4,000 ft AGL. Field size supports up to a J motor. The contest range will be located and run separately from the sport range.

The following events are scheduled:
- A Streamer Duration
- 1/2A Parachute Duration Multi-Round
- D Dual Egg Loft Duration
- B Boost Glide
- Random Duration
- Open Spot Landing

This contest will be conducted in accordance with the current U.S. Model Rocket Sporting Code and the NAR Safety Code. For more info about each event, you may find the "Pink Book" online at www.nar.org/pinkbook/

The cost to compete is only $5.00 per entrant.

For more information, visit the MASA website at: www.masa-rocketry.org or contact Mike....

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Scratch Build

Modeling the Explorer 1 Satellite

by Ray King

As part of the EMMR challenge which a year long competition where you participate in 10 different events earning points toward the opportunity to be placed in a drawing for some very nice prizes. In this case the challenge was to model a scale rocket using RockSim (or other simulation software), build it and fly it comparing the results.

I chose to model the Explore 1 satellite. Explorer 1 (officially titled at NASA as satellite 1958 Alpha) was the first Earth satellite of the United States, launched on February 1, 1958. Since this was my first real experience with RockSim I thought it was fitting to model the first satellite launched by the US. My Explorer is designed to launch using an 18mm engine and deploys an 18-24" parachute. Scale factor of 4.528 which results in a rocket 17.83" long.

Component Description:

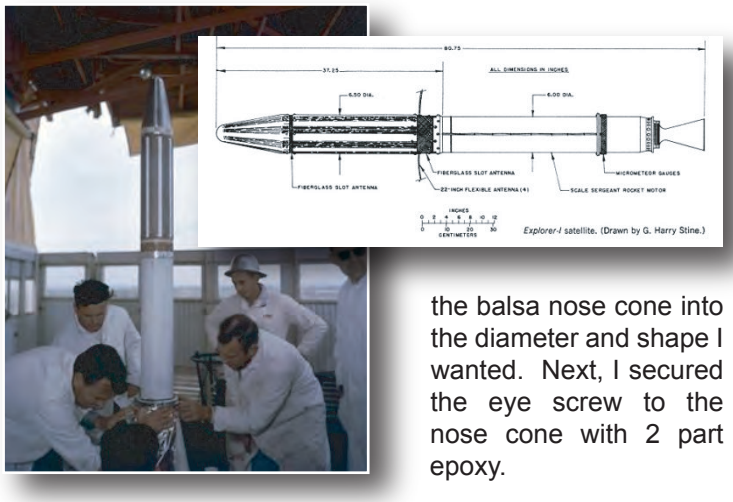
- 1 - BT60 Balsa nose cone
- 1 – #10 Screw Eye
- 1 - BT55 - 5.44" long
- 1 - BT55 - 13.197" long
- 1 – BT20 – 5.0" long
- 3 centering rings BT20 to BT55
- 2 exterior centering rings
- 3 fins - .030" thick clear Lexan fins
- 18" - 175 # Kevlar String
- 24" - .375" elastic shock cord
- 18-24" plastic parachute
- Card Stock
- Launch lug (if desired)

Design using RockSim:

As I mentioned above this was my first real experience with RockSim to design a rocket from scratch. I downloaded the demo version without issue. Having seen others use it I was pretty familiar the functionality. It didn't take long to get the hang of it and I was off and running. I modeled the Explorer I with multiple motor options and settled on C6-5 which produced an altitude of roughly 750 ft at a speed of 217 ft/sec. This seemed reasonable to me so on to the build.

Nose Cone :

If you look closely at the drawing shown above the there are 2 different diameters of tubes on this rocket. I decide the best way to handle this was to start with a BT60 nose cone and sand it the desired diameter and shape. In this case the software was a lot easier to make these modifications than sanding down the BT60 cone. OK enough whining – I sanded the balsa nose cone into the diameter and shape I wanted. Next, I secured the eye screw to the nose cone with 2 part epoxy.



Explorer-I satellite. (Drawn by G. Harry Stine.)

Main Body Tube Assembly:

As I mentioned above the body of the rocket is made up of 2 diameters so I cut the 5.44 tube lengthwise and wrapped it around the top section of the 13.197" tube. I filled the seam with Elmer's Wood filler and sanded it smooth. This took 2 or 3 times to completely eliminate the seam.

Next, I added to centering rings to represent the "MicroMeteor Gauges" (see pictures).

Engine Motor Mount:

The engine tube is 5" long. Mount 2 centering rings, the first one 1" from the end and the second 3.0" from the same end. This sub-assembly can be glued into the body tube on the smaller diameter. Push this sub-assembly into the main body so the second ring is flush with the end of the tube.

Engine Cone Assembly:

I used the EMRR shroud calculator to help make the two cones used to form the engine cone. The first one is 1.32" diameter by .50" long and the second is 1.50" diameter by 1.60" long each to fit over the BT20 tube. I cut out and glued the cones together. The cone assembly can be mounted to the BT20 tube and epoxy the small cone to the BT55 tube. After this is dry slide a centering ring onto the BT20 and into the large cone, this ring will help support the cone.

Parachute and Shock Cord:

The original plan was to attach the Kevlar shock cord the engine motor mount; however, I forgot to do this. I will secure the Kevlar cord to engine prior to installing the engine. I prefer either of these methods over the traditional Estes mount. I will use an 18" Mylar parachute for recovery for a nice slow decent.

Paint, Finishing, and Clear Fins:

Finishing started with filling the tube spirals and balsa nose cone with Elmer's wood filler. This took a number of coats sanding each smooth. Next, I added a couple of coats of white primer. Next, I used Tamiya Acrylic White Gloss (X-2) for the base coat. Once this was dry I masked the top section and painted Red Brown (XF-64) (see pictures). Next, I masked for the copper and painted these areas with Dark Copper (XF-28). After the copper was dry I attached 3 clear Lexan fins. Finally, I clear coated the entire model.

Continued on Next Page...

Explorer 1 Continued

Flight and Recovery:
Flight Prep - basic flight prep with only one slight modification. The Kelvar shock cord is tied around the motor prior to installing the motor. Insert the motor (Estes C6-5) and tape it in place with Mylar type. Next add wading, roll the parachute and stuff the lines. It was 7 degrees when I flew this rocket so I covered the parachute in baby powder to avoid deployment issues.

I am not a big fan of launch lugs because of visual appearance as well as performance impact. I planned to launch his rocket from a tower launcher to eliminate the need of a launch lug.

As I mentioned above it was cold the morning of the launch (7 degrees) with a slight wind ~5mph so the wind chill was around 0 degrees, perfect for North/Western Wisconsin. Launch was perfectly straight, probably very close to the RockSim calculation of ~750ft. Apogee occurred and the parachute ejected. The parachute only opened partially, I assume due to the cold, by the time I reached the rocket the parachute was fully open after blowing in the wind of a few minutes. The rocket came in fairly fast and broke a fin off on landing. Minor repair and the rocket will be ready to fly again.

RockSim Evaluation:
The actual flight results mimicked the RockSim results. I wasn't able to confirm the altitude numbers, but I would say they were pretty close. RockSim allowed me to change and adjust the rocket design as well as engine size until the design was stable. This was a big advantage over my previous technique of trial and error. I have added the latest RockSIm release to my Christmas list.

Summary (Pro's & Con's)
Pro's -Rocket looks great, flies great and RockSim allowed me predict the results prior to wasting any time build a design that won't fly.
Con's – no Con's

MASA Planet

Out and About

A New Ax-Man

by Alan Estenson

Everyone's favorite Twin Cities surplus chain has opened a new location in Crystal, and it's only 5 miles from my house! This could be dangerous… On a recent Friday, I stopped by to check it out.

The store is pretty good sized – at least as big as Fridley location where I've traditionally shopped. While they're only starting to accumulate strange curiosities to hang from the ceiling, the traditional Ax-Man tongue-in-cheek signage is well in hand. As usual, there is a wide variety of the usual (and unusual) surplus augmented by cheapo non-surplus new merchandise. Perhaps due to the store's proximity to the Crystal airport, they had several shelves of really old aircraft radios and electronics. There was also a large section of small pneumatic pistons and actuators. I didn't buy any, but now I find myself thinking of potential cool things to do with them… Scientific glassware, electronic parts, motors, doohickeys, and thingamabobs abound. As usual for Ax-Man, you never know what you'll find.

Those red AC power cords that many of us use for igniter leads? They had the usual huge box of them – still only 50 cents each. They also had small stainless steel ice buckets for $2 apiece. Just the right size to put next to your launch pad as a mini trashcan, or drill a hole in the bottom, turn it upside down and use it as a blast deflector. No military surplus parachutes were to be found. However, they did have a variety of cardboard mailing tubes and mylar film sold by the foot.

As always, I found myself walking the aisles, basket in hand, thinking "Hey, that thingy could be useful for something, someday, and it's only 75 cents…" Amongst the trinkets that I purchased was a miniature, one pound anvil for $4. I was very tempted to suggest new signage – "Useful for teaching lessons to very small coyotes."

Ax-Man Surplus, 6600 Bass Lake Road, (763) 536-7786
(on the north side of Bass Lake Road, just east of West Broadway, next door to Half-Price Books)

HCA TARC Report

The Death of Dead Cow

by Art Gibbens

So, what's black and white and red all over? (With emphasis on the all over the launch area part of the question.) Why that would be Hope Christian Academy's rocket, named Dead Cow for its unique paint scheme, after the Cato of one of their E9-8 motors on their last planned flight of the day. If you were at the launch on March 28 you witnessed the HCA team trying to get a good enough qualifying score to once again head to the finals of Team America Rocketry Challenge for 2009. You probably also saw their final flight of the competition for this year.

HCA flew a total of six flights and here is how the saga unfolded. Their first flight was based on what RocSim predicted they would need to hit the marks of 45 seconds aloft and 750 feet in altitude. They were using three D12-7 motors with some 80 grams of ballast on board, in addition to the ballast they were using to compensate for an egg. Well, that's why they call it a prediction because they only got 426 feet of altitude and a time of 27.37. So they decided to keep their engine profile the same and lighten the rocket by removing all excess ballast. Results were disappointing at 545 feet and 39.2 seconds. Now they were in a quandary. They had to decide what engine combination to use to try to get more height and yet not endanger the egg with too long of a delay. They decided to use E9-6 and E9-8 engines along with two D12-7 engines on their last four flights of the day. The third flight had no additional ballast, similar to their second flight and they went 795 feet with a time of 58.4. They got real excited after this flight as it was a real morale booster because the first two flights had been disappointing. So they added some ballast back to the rocket and reloaded it again, this time with an egg to ensure that they could fly their rocket and recover the egg without breaking it. On this fourth flight they launched while the winds were gusting and the rocket tipped into the wind causing them to only attain an altitude of 638 feet with a time of 44.6 seconds.

So they know they are down to their last two flights and decide to make no changes to the weight of the rocket and to refly as is. So they ask for two impartial NAR members to be timers and observers for this flight and hit the launch button. Rats! Only two of the three motors light and they get a safe qualified flight of 303 feet and an average time of 24.32 which gives them a score of 395.64 to submit. On their final flight, again they decide to make no changes to the amount of ballast they have on board and to reload using their last E9-8 to make their final qualifying launch. And that's when disaster struck, with the Cato blowing out the side of rocket causing one fin to flap in the breeze during flight and spewing confetti that was once their rocket around the launch pad. Even amidst the catasphrophy the two D12-7 engines both lit and they were able to attain an altitude of 208 feet with the safe recovery of the egg. However, the rules stipulate that if a team does have a Cato during a qualifying launch attempt that they would be allowed a do-over.

HCA's Dead Cow is history however, as most of the Cato propellant grain ended up forward of the engine mount while still burning which resulted in the wall of the air frame to be burnt through from the inside out. The recovery wadding did a great job of keeping the parachutes protected during this burn, however the shock cord was charred through causing the sustainer to fall to the ground as the parachute fluttered down beside it. The damage to the rocket is too severe to repair and there is not enough time to rebuild so they have to hope that their first score will get them to finals. For you see, yesterday was the first day of their spring break and even though there is another week until the contest is closed to make qualifying flights, there is no way that the team can get together to rebuild the rocket to fly it next weekend. Most of them will be away on vacation, so it was do or die time at the launch yesterday. And they fought valiantly.

AVHS TARC Report

Ted on TARC

by Ted Cochran

Apple Valley High School has had teams in the Team America Rocketry Challenge in each of the past seven years, and have reached the finals five times. This year, the team fielded three teams, creatively named Team 1, Team 2, and Team 3. Team 1, the "Senior Team" had the most experienced members--most of them had been in TARC for the past two or three years. Team 2, called the "Freshman team" was actually last year's freshman team, carried over with membership almost completely intact. Team 3, the new team, was the least experienced. The teams met nearly every Tuesday afternoon, beginning in September, in Mr. Neil Michael's physics classroom.

Last year's teams had all used fairly simple BT-70 to BT-60 designs with three or four fins, weighing between 300 and 350 grams, with E9 or E15 motors. This year there was only one egg to fly, not two, but the egg had to be on its side, necessitating a switch to BT-80 payload tubes. All of the teams used E15-4W single use motors and shared the same rail and quadpod. Two teams used constant diameter BT-80 rockets and had to work hard to achieve the required 750 feet of altitude; Team 2 used a transition to BT-60 for the lower half of the rocket and spent most of their time trying to determine how much weight to add to keep their rocket under 750 feet.

Teams flew every week when the weather was suitable, all winter long. There were fewer really tragic flights than in years past, as teams took advantage of their accumulated experience. For example, unlike in past years, the parachute this year was always in the rocket and attached to the recovery system. There were the usual issues with separations, broken fins, broken eggs, and recovery from trees (Mr. Michaels has a 40-foot telescoping lineman's pole that had to be extended by 15 additional feet on several occasions). Perhaps the most miraculous flight occurred late in the season, when Team 1's rocket managed to eject its engine mount, with the engine still in it. The payload compartment stayed on; the engine mount dragged out the parachute, and the whole rocket descended slowly, nose first, as if it had been designed that way.

As the season progressed, however, the teams all improved, gaining better knowledge of launch rod angle as a function of wind speed, igniter placement, egg padding, parachute packing, ballast weight, and the use of Rocksim. In the last month, Team 1 switched from a constant diameter model to a combination of BT80 and BT60 in order to reduce drag and more reliable achieve the target altitude.

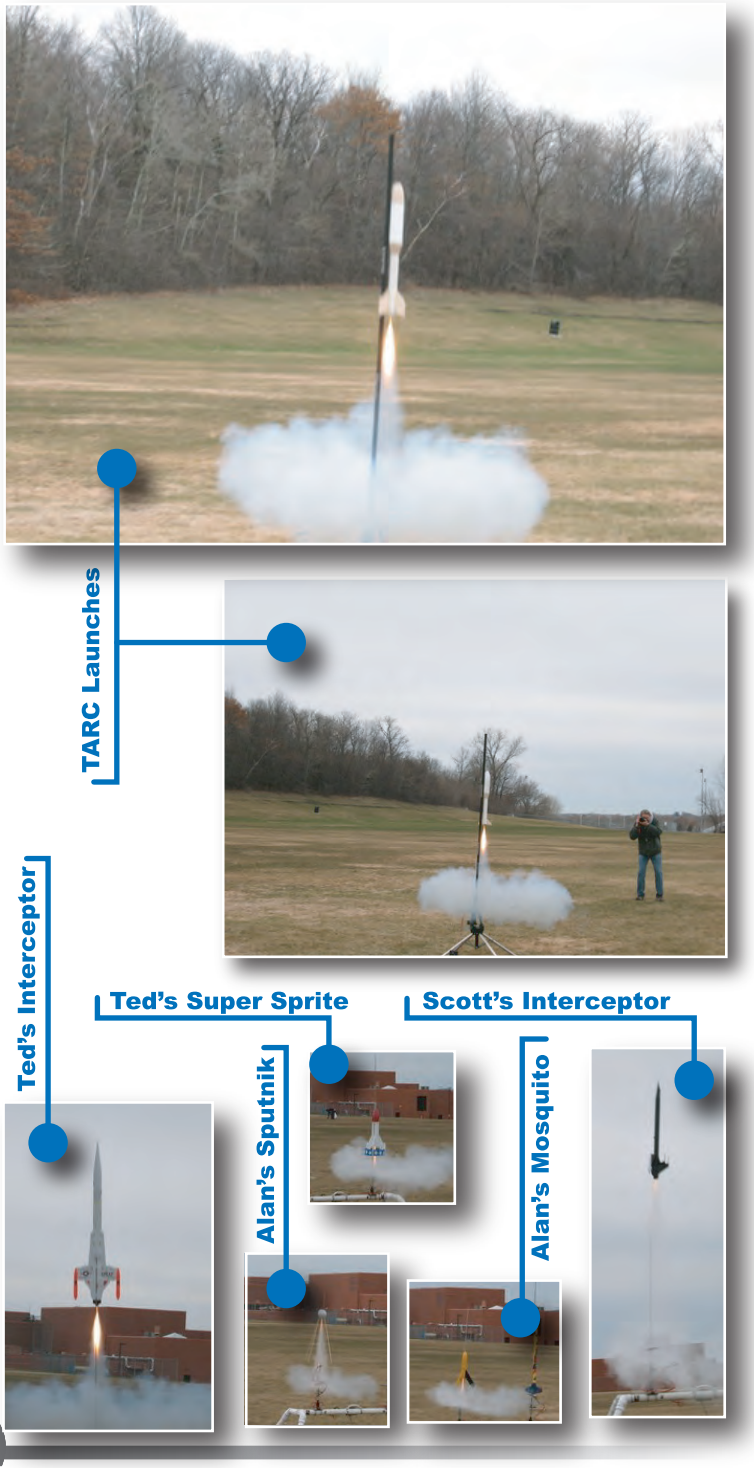
The pace picked up as April approached, despite the late season snowstorms and generally unfavorable weather. Apple Valley's spring break was two weeks before the deadline, leaving all of the qualification attempts to the last minute. The teams flew multiple practice flights on Friday, and Team 3 felt confident enough to attempt a qualifying flight, which scored under a 10--good enough that they decided not to risk their rocket on another attempt. Teams 1 and 2 had rockets that needed repair, and had to defer qualifying attempts until Saturday--their last chance, since the weather on Sunday--the final day for attempts--was forecast to be terrible).

After a long day and many practice flights on Saturday, Team 1 managed a score under 15, and Team 2 made the alternate list with a score just under 20. Can Apple Valley break its hex at the Finals (They have yet to finish in the top 25)?

Stay tuned!

April Launch Pictures

by Scott Gleason



MASA PLANET

MASA Planet Editor's Choice for Innovation of the Year

Standard Rocket Assembly Tool

Standard Rockets INC.

Easy as 3...2..1

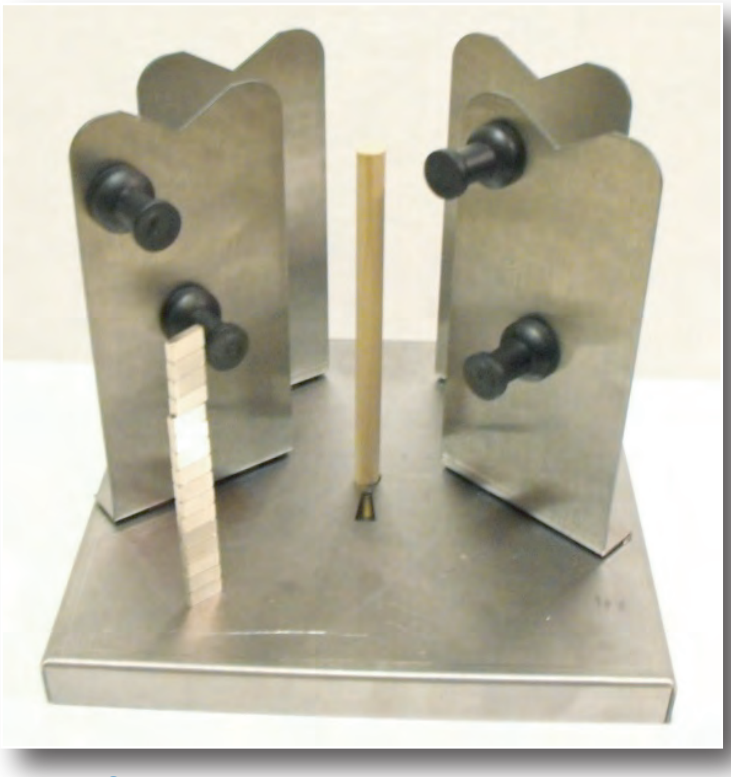
One of MASA's newest members, Lyle Merdan, is hoping to straighten out the rocketry hobby – literally. Lyle has invented a unique assembly aid that will help hold your fins straight while the glue dries – an issue that all of us have had to struggle with.

Lyle started in the rocketry hobby about a year and a half ago, building a rocket in the winter of 2007 and launching it in the spring with a crowd of neighborhood kids. Since then, he has put together about 25 different rockets which, as Lyle puts it, "Around half of those have been swallowed by clouds, drown in a holding pond, decorated someone's roof or been just plain old wore out." Lyle joined the NAR earlier this year and is working towards getting his Level 1 High Power Certification later this month at NSL2009 with a Wildman Jr. Lyle's favorite rocket, which he has built two of so far, is the FlisKits Praetor. Unfortunately one of them was carried away by the wind after over 50 flights. His latest project is an AeroTech HV ARCAS that was painted last fall and is waiting for stickers and rail buttons. His currently has a Zooch Lifting Body Space Shuttle, a Zooch Saturn V, a Wildman Jr., a Semroc Launch Missile, a Q-modeling WAC Corporal and an ASP WAC Corporal with booster on his workbench.

As we all know, maintaining the radial and longitudinal alignment of the fins while the glue dries is one of the biggest challenges we face in rocket building. While many companies and individuals have different solutions for this problem, Lyle set out to find his own. In addition to building rockets, Lyle has started Standard Rockets (www.standardrockets.com) and is marketing an amazing product called the Standard Rockets Assembly Tool. According to Lyle, "I was always disappointed with my fin alignment and hated holding fins as they dry. I looked at the original fin-kwik and saw some posts on YORF http://forums.rocketshoppe.com/showthread.php?t=2249. Around 10 months after the first post and nothing materializing I decided I would come up with a modernized replacement for that jig."

Lyle continues. "I had examined the yellow plastic Estes single fin alignment/holder tool and was sorely disappointed. Probably because of the plastic V channel was not straight, and that the fin wasn't held in place very well without denting the leading edge. Apogee Components had a free design similar to the yellow Estes one off of their website. It worked better because the balsa backed paper was straight. The closest I came to another jig design was when I started toying with the idea of a V channel of aluminum with some legs to cradle the body tube horizontally, and then have a bed for holding a fin similar to the rose fin jig design, minus the adjustable bed. The drawback of this was there was no cheap and simple design to make adjustments for fin thicknesses. Next in consideration for the tool design was the Fin-Kwik. I did not like the thumbscrews but I did like the sturdiness of it. Next I did some research on the plastic "copy" of the Fin-Kwik and knowing the cost associated with making plastic and the durability of it, I moved back to the Fin-Kwik style of metal."

Lyle's main design considerations were accommodating 13mm through 5 inch body tube sizes along with fin styles from something like the Fliskits Drake to the Big Bertha. That is, non-conventional angles from the center of the body tube, to fins that trailed far behind the bottom of the body tube. The Standard Rockets Assembly Tool is a simple and innovative solution to alignment problems. Made out of heavy sheet metal, the tool has a sturdy base with a 3/16" bushing in the middle that accepts a wood dowel or steel rod. A spent motor casing drilled out and glued to a dowel that is inserted into the bushing serves as the support for the rocket body. Longer dowels are used for rockets that have fins that sweep back beyond the end of the body (like a Big Bertha), and shorter dowels are used for rockets that have fins that don't sweep back beyond the end of the body (like a Laser X). The base even has a motor hook clearance slot to allow a rocket body to sit right on the base.



The Standard Rockets Assembly Tool comes complete with an 8" square metal base, four 6" tall magnetic upright supports and a host of magnets

Continued on Next Page...

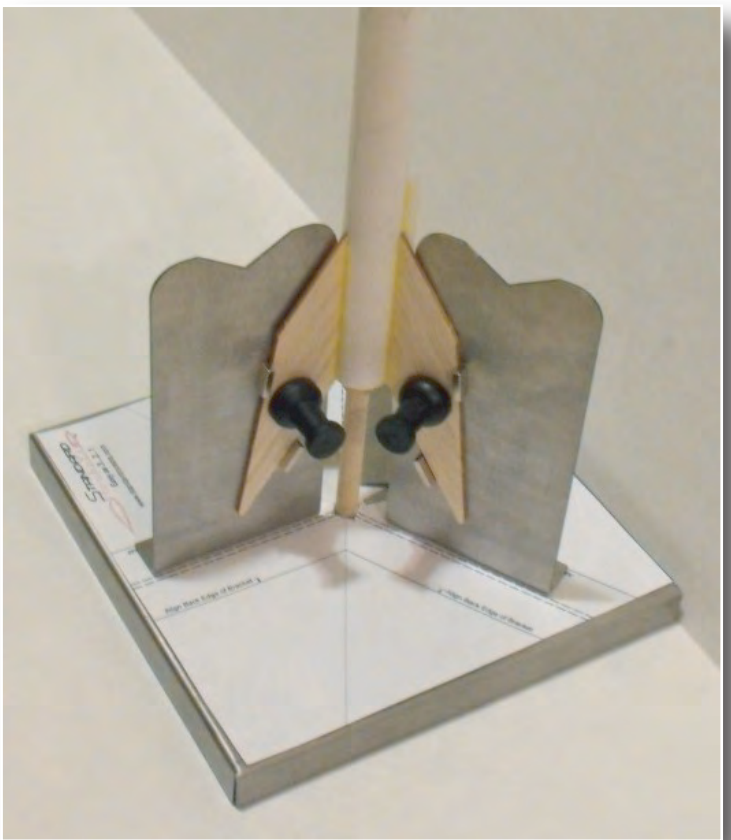
Standard Rocket Assembly Tool Continued

Paper templates taped to the base are used to align the fins. Templates are available for all the popular fin thicknesses for 3 and 4 fin blade configurations. Special templates can also be made for those special cases when fins aren't meant to be perpendicular to the body, or if your project requires special radial spacing. The templates indicate where to place the magnetic fin support plates for perfect alignment every time. After placing the supports on the base in the proper position, the fins are held in place with more magnets while the glue dries.

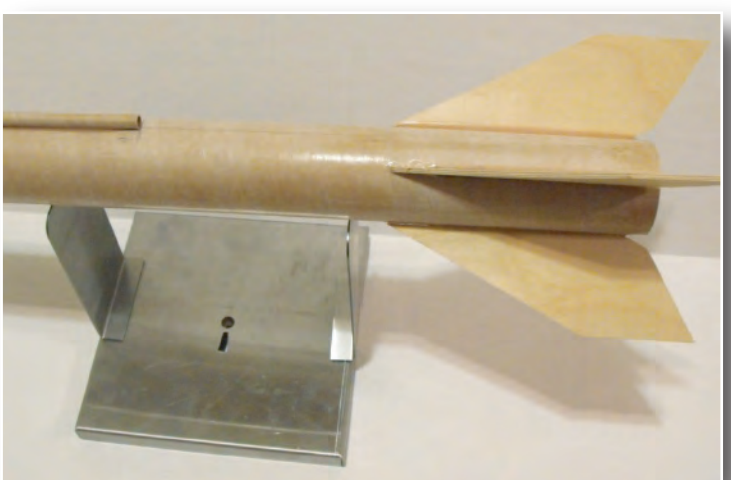
According to Lyle, the inspiration behind using magnets "wasn't so much as a decision as an 'A-Ha' moment one day at work. A co-worker of mine removes the magnets from failed hard drives and sticks them to his cubicle wall or inconspicuous places on people's cars. I managed to give myself a blood blister one day when messing around and had one of those A-Ha moments. I took a few magnets home to test with balsa and sheet metal over the weekend. Some simple tests confirmed my suspicion that much smaller magnets would work for holding balsa in place."

The big debut for the Standard Rockets Assembly Tool was when Lyle took it to NARCON 2009 and presented it at the Vendor's Forum. He was busy the rest of the weekend in the Vendor Room talking with his new customers and other vendors. Not surprisingly, Lyle sold out his entire inventory of the tool at NARCON 2009. Between plans to make some upgrades to the tool and a trip to Florida to watch the launch of STS-125 Lyle will be busy enough that he will be attending NSL2009 only as a participant and not as a vendor. But he is planning on attending NARAM-51 as a vendor with an upgraded version of the Standard Rockets Assembly Tool. The upgrades include a larger selection of magnets for assembling odd rockets along with some improvements to the center rocket support.

The editor's LOC Tweed-B held in place on the Standard Rockets Assembly Tool



The editor's 3-fin Semroc Astro-Jr



Each of the 6" upright supports even have a cradle-shape cutout on top to hold rockets horizontally while fin fillets dry

2009 Meeting Schedule

Subject to Change

Check MASA Website or Yahoo Group for updates

Unless otherwise specified, meetings will be held from 7:00 pm - 9:00 pm at the Science Museum of Minnesota

June MASA Meeting
Thursday, June 4 - Topic: TBD

July MASA Meeting
Held in conjuction with the MASA Summer Picnic
See Launch Schedule for details

August MASA Meeting
Thursday, August 6 - Topic: TBD

September MASA Meeting
Thursday, September 3 - Topic: TBD

October MASA Meeting
Thursday, October 1 - Topic: TBD

November MASA Meeting
Thursday, November 5 - Topic: TBD

MASA Holiday Party
Date, Time and Location: TBD
(Consider volunterring to host!)

MASA Directory

Established January 1998
Founding President: Russ Durkee

2009 President and Webmaster
Alan Estenson - estenson@mn-rocketry.net

2009 Vice President
Carol Marple - cjmarple@peoplepc.com

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Rick Vatsaas - rick@vatsaas.org

MASA Planet Newsletter Editor
Jeff Taylor - jeff.taylor@mn-rocketry.net

Club Website
www.masa-rocketry.org

Club Yahoo Group
http://groups.yahoo.com/group/masarocketry/

2009 Launch Windows

Subject to Change

Check MASA Website or Yahoo Group for updates

All MASA Launches are "Misfire Alley"
(bring your own launch pad and controller)

NSL 2009 NAR National Event
May 23-25
Location: Kansasville, WI
For details, vitis: www.nsl2009.org

MASA May Launch *
Saturday, May 30 - 9:00 am to 4:00 pm
Location: Nowthen sod fields
Theme: Odd-Rocs
Notes: One week later than normal

Solstice Evening Launch
Saturday, June 20 - 5:00 pm to 10:00 pm
Location: Elk River VFW
Notes: Model Rockets (max 1 lb and max "E" motor) only. Bring your own launch equipment - no community pads will be available.

MASA June Launch *
Saturday, June 27 - 9:00 am to 4:00 pm
Location: Nowthen sod fields
Bring your built rockets to donate to NARAM-51 - See Carol Marple for details

MASA Summer Regional Contest *
Saturday, June 27 and Sunday, June 28
9:00 am to 5:00 pm NAR Regional Event
Location: Nowthen sod fields
Events: Many Duration and Spot Landing Events
Notes: See the contest web page for all the details

MASA Summer Picnic
Saturday, July 18 - 2:00 pm to 9:00 pm
Location: Elk River VFW
Notes: Model Rockets (max 1 lb and max "E" motor) only

MASA July Launch *
Saturday, July 25 - 9:00 am to 4:00 pm
Location: Nowthen sod fields
Theme: Apollo 11 40th Anniversary
Events: Saturn Beauty Contest

NARAM 51 NAR National Event
August 8-14
Location: Johnstown, PA
For details, visit: www.naram.org

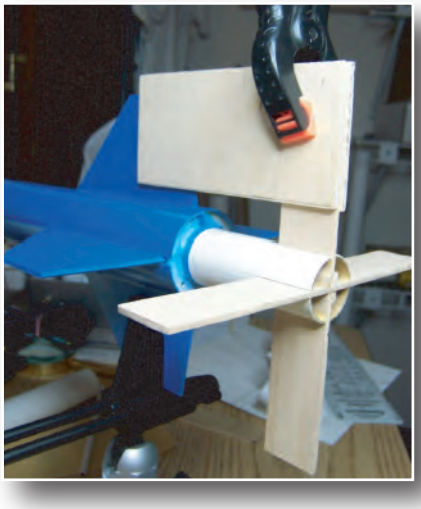
MASA August Launch *
Saturday, August 22 - 9:00 am to 4:00 pm
Location: Nowthen sod fields
Theme: Multi-staging
Events: The Great Annual UFO Drag Race, Comanche-3 Drag Race

* For Nowthen sod fields only: FAA waiver will be in effect permitting high power flights to 4,500 feet AGL. Field size supports up through J motors.

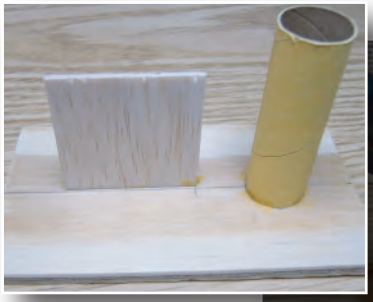
Tech Report
A Fin Holding Device
By Glen Overby

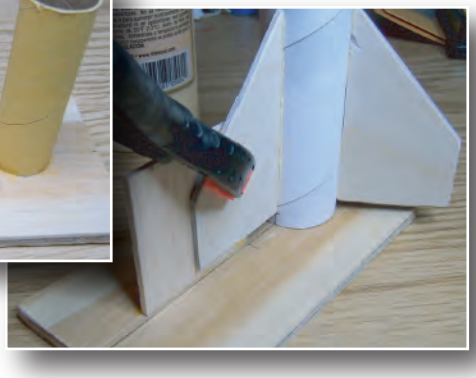
I'm always looking for an easier way to build rockets. In the March 2005 issue of the MASA Planet (Vol 8-2) is a 'tech tip' about an old fin guide I built based on Tim VanMillgan's fin guide, to hold the fin vertically as well as longitudinally. That tool does not help with positioning the fin, only holding it, so I've stopped using it. Since then, I've built several jigs to help with alignment and holding.

There are fin aligment jigs available commercially, such as Art Rose's very elaborate one (it is pictured in The Handbook of Model Rocketry). Another elaborate design is described in US Patent 3805355.



This one is two basswood boards notched to fit together and carefully glued at a right angle by clamping them to a triangle while the glue dried, that matches a 4-fin rocket (I have a similar one for a 3 fin rocket). These mount to the motor mount and are fine for position aligning fins. I typically clamp a couple of boards to them to hold the fin. However, this tool doesn't feel like it holds the fin well longitudinally along the body tube. This has the opposite problem of the VanMilligan tool.



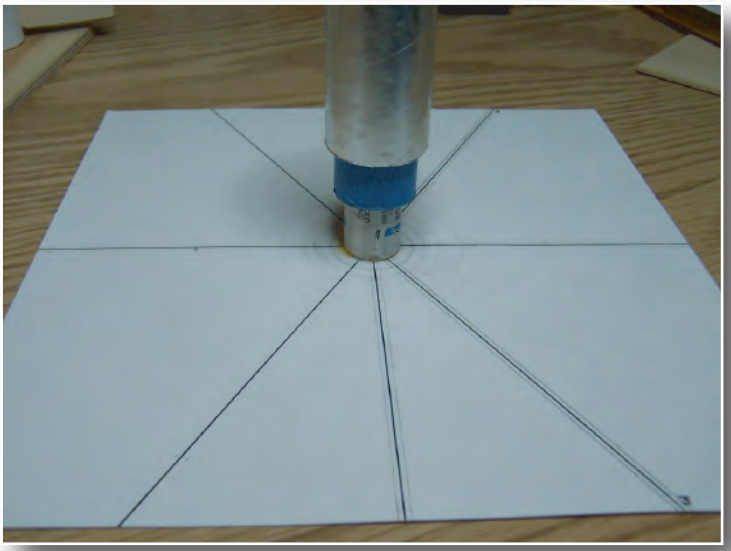


I was recently reading a "build thread" on Rocketry Planet where the writer used a piece of marble tile to hold a rocket and fin for gluing; the tile was just the right thickness to hold the fin centered on the body tube. That got me thinking about how I could design something like that for any size body tube and any thickness fin. After a while, I gave up. The problem wasn't building a jig: the problem was building a jig that could be correctly, easily, and repeatably set up for a fin of any thickness and a body tube of any diameter. Instead, I reduced the problem: build a fin jig for 3/32" material (which most of my fins are) to glue fins to BT-50 (24mm) and 29mm motor tubes. I attach the motor mount tube to the jig using a BT-50 coupler.

Building a fin gluing jig has to be done carefully, or all of your rockets will come out wrong. I drew a line down the center of the board, then carefully measured where the BT-50 coupler was to go. I carefully tacked down a the coupler, gluing all around it after I was satisfied that it was in the right place. I marked the location to glue the vertical piece of balsa by mostly eyeballing a piece of balsa on the line, then drew a line where the vertical is to go. I glued the balsa using a piece of aluminum angle to hold it straight up (no, my first try didn't work right -- the board isn't entirely flat!)

I still didn't have a fin jig for gluing 1/8" plywood on a 38mm tube, which happens to be my current project. A quick measurement of the O.D. of LOC 38mm tube with a digital caliper of 1.635", divide by two, minus 1/16" (0.0625) is... 0.755". Hey, isn't 1" lumber actually about 3/4" thick? I went out to the garage and measured several boards; I found one that was 0.76" thick. A few minutes with 100 grit sanding block and I was happy with the thickness of the board.

I clamped my form to a board, leaving enough hanging off of the end to allow gluing all four fins without having to reposition it. The motor tube is gently clamped to the form to keep it from moving. A scrap of 1/16" board is clamped at the end to give me something to align the marking on the tube with.



This is my fin marking jig. It has lines for three and four fin rockets, with a 18mm motor glued in the center. There are also circles for the various tube sizes which I drew to hand center tubes on the jig (before I glued down the motor). I use adapters to get to 24mm and 29mm tubes, and use a motor mount on centering rings for holding the tubes.

Pay Forward From Home

Time is Running Out to Get Your Rocket Donations Turned In

by Carol Marple

The NARAM 51 organizers are planning a “Fly-it/Take-it” event similar to the one held at NARAM 50. This event is for kids (13 and younger) and first-time flyers of any age to have an opportunity to fly an already-built rocket.

Fly-it/Take-it participants will be allowed to select a rocket, and they will be provided with a motor, wadding, and assistance with prepping the rocket. They can then go to the sport range and fly their rocket. The rocket will be theirs to keep.

Like last year, the organizers are requesting that NAR sections build and donate rockets to support the Fly-it/Take-it event. Sections are encouraged to personalize or customize the rockets they build and donate. The only restrictions are that the rocket must fly on a single 18mm black powder motor, it must contain an appropriate recovery device, and complex rockets are not recommended.

MASA will support the NARAM 51 Fi/Ti event by donating as many rockets as possible. Last year, MASA members generously donated 10 rockets to support the NARAM 50 Fly-It/Take-it event. I heard through the grapevine that the rockets we donated were some of the nicest they received. I even received thank you notes from the two kids who selected the rockets I donated.

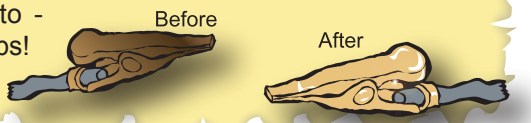
I will collect donated rockets at the June 2009 launch (just around trhe corner). I’d be happy to take donations before then, too, but the absolute latest date to turn in your donation is the June 2009 launch. Please let me know if you're interested in participating. You can email me directly at carol.marple@atk.com.

Thank you in advance for your support!

Clip Tip

Submitted by Alan Estenson
Author: Anonymous

Are your igniter clips all gunky? Dunk them in a dish of white vinegar and let soak for 10 to 15 minutes. Stare in awe as they fizz and bubble! Wipe off any remaining goo with a rag and then rinse with water or alcohol. Presto - shiny clean clips!



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