



ESSENCE'S MODEL ROCKETRY REVIEWS & RESOURCES

NARCON 2009

March, 21st

Nick Esselman

www.rocketreviews.com





ESSENCE'S MODEL ROCKETRY REVIEWS & RESOURCES

- EMRR is a rocketry website that contains:

- » 3,448 Reviews/Articles
- » 830 Authors
- » 29,660 Flight Logs
- » 2,064 RockSim Files
- » 1,653 CP Listings
- » 3,330 Recommended Motors
- » 2,537 Opinions
- » 404 Stories
- » 429 Hints/Tips
- » 819 Rocket Specific Tips
- » 894 Glossary Terms
- » 144 Who's Who Profiles



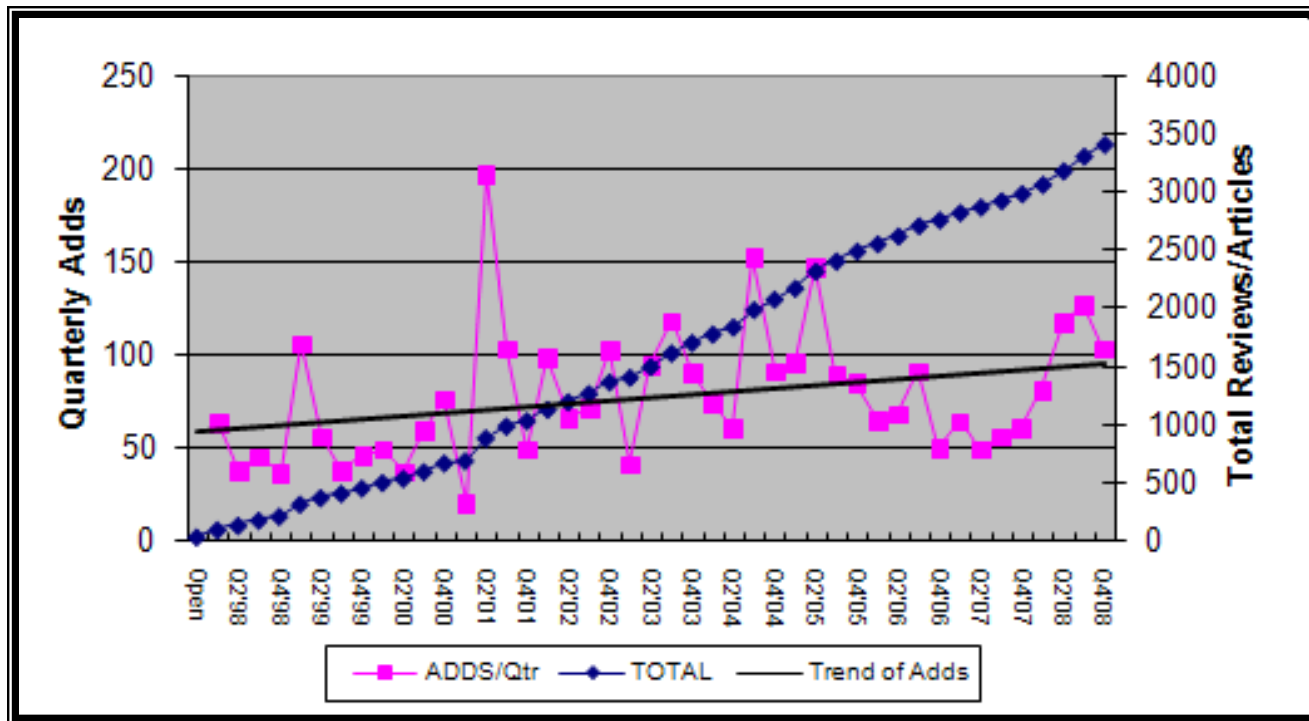
www.rocketreviews.com





ESSENCE'S MODEL ROCKETRY REVIEWS & RESOURCES

- EMRR is now 11 years old!
 - Continuous growth and features
 - Consistent format and content
 - Easy and Accurate Search Engine (we're told)





ESSENCE'S MODEL ROCKETRY REVIEWS & RESOURCES

- The primary benefit of EMRR comes from the shared experiences of our guest contributors
 - Rocket Product Reviews
 - Give details about the products and kits, build experience and fly experience
 - Tips, Techniques, and Tools
 - Skills are learned and demonstrated for all levels of model rocketry, model, mid-power, and high-power
 - Contests
 - A lot of fun in competition and amazing results in design, photo, video and other contests
 - Resources
 - Largest RockSIM Design library (new SpaceCAD library added)
 - Who's Who in Rocketry Registry
 - Rocket Glossary
 - Manufacturers Recommended Motors Database
 - Center of Pressure Database



- Rocket Product Reviews
 - Ratings are not the key component of the review
 - Builder's experience, likes and dislikes, bias ratings of various kits
 - Use them only as a guide
 - Pictures tell 1000 words
 - In-progress build pictures are beneficial
 - Unique techniques or building sequences
 - Special situations
 - Finish and Flight
 - Take your time
 - Progressive drafts can be saved to EMRR and updated during the build, finish and flight process of full review
 - As many accurate details as possible benefit the readers



ESSENCE'S MODEL ROCKETRY REVIEWS & RESOURCES

• What you will find in Reviews:

Review Archives by Manufacturer

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

L = LPR (up to E) **M** = MPR (F and G) **H** = HPR (H+) **S** = Scale Rockets **O** = Other Products

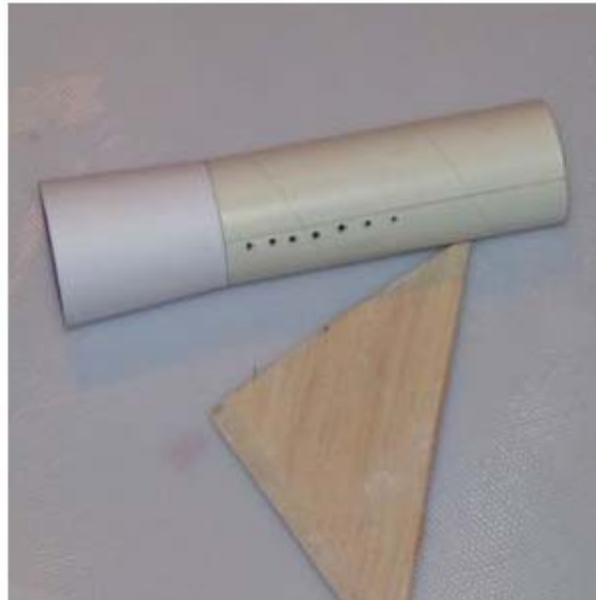
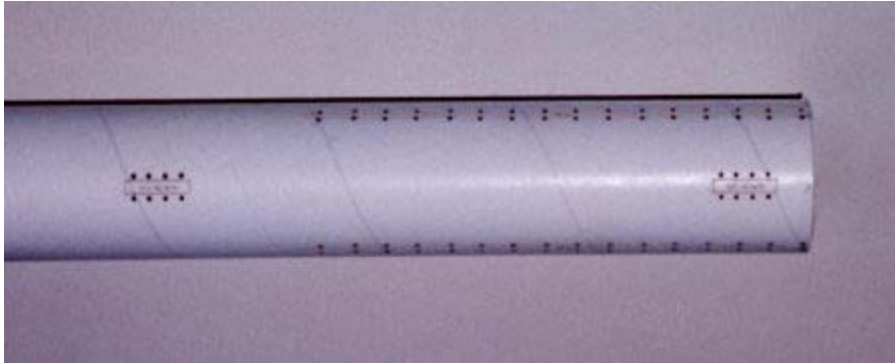
1. **O** [Misc](#)
2. **O** [1021 Designs \(OOP\)](#)
3. **M H** [AAA Model Aviation Fuels \(OOP\)](#)
4. **L M H S** [Aardvark Rockets \(OOP\)](#)
5. **O** [Acme Engineering](#)
6. **L M** [Advanced Rocketry Corporation](#)
7. **L M S** [Advanced Rocketry Group Ltd.](#)
8. **L S** [Adventures in Rocketry \(OOP\)](#)
9. **O** [Aero Pack](#)
10. **L M H** [Aerocon Systems](#)
11. **O** [AeroRocket](#)
12. **L M H S** [Aerospace Speciality Products \(ASP\)](#)
13. **M H** [Aerotech Aerospace](#)
14. **M** [Alien Enterprises](#)
15. **L** [American Alliance Rocketry](#)
16. **O** [Anchor Parachutes](#)
17. **O** [Animal Motor Works](#)
18. **O** [AntiGravity Research Corporation](#)
19. **L M S** [Apogee Components](#)
20. **O** [ARA Press](#)
21. **L M H** [Art Applewhite Rockets](#)
22. **L M S** [Atlantic Rockets \(OOP\)](#)
23. **O** [B2 Rocketry Company](#)
24. **L** [Ballistic Bob \(OOP\)](#)
25. **L** [Balsa Machining Service](#)
26. **O** [BigRedBee](#)





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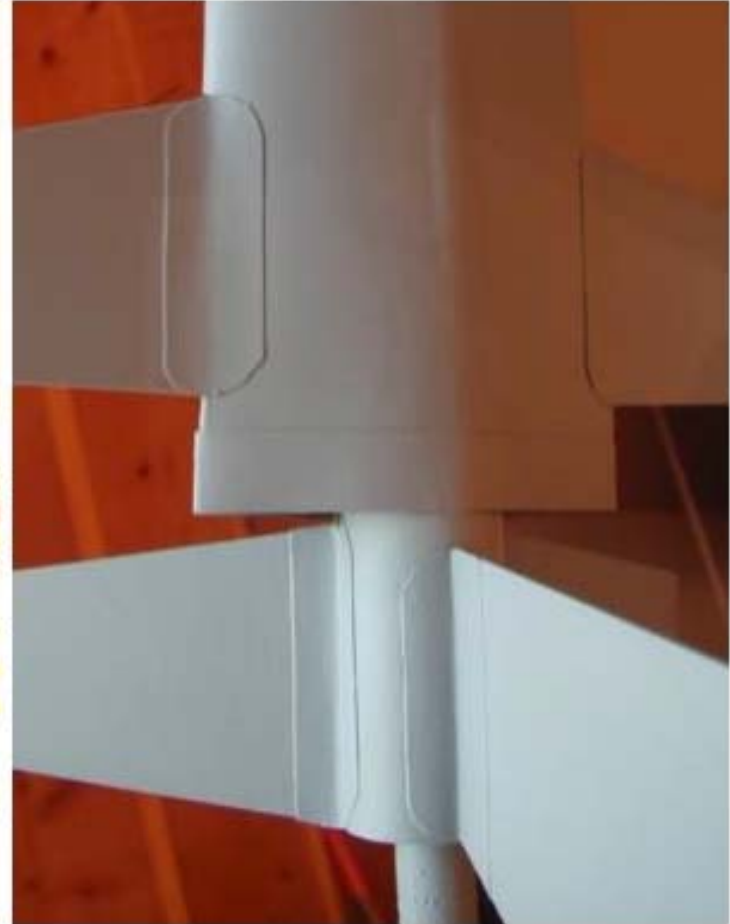
- Fin Attachment: Strengthening Technique I learned from Nordic Rocketry:





ESSENCE'S MODEL ROCKETRY REVIEWS & RESOURCES

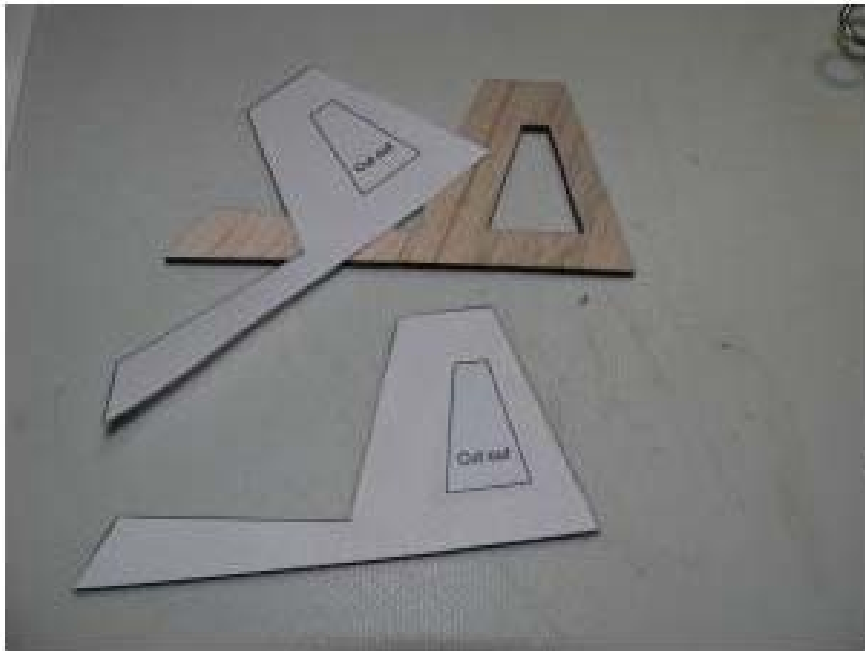
- Fin Attachment: Strengthening Technique I learned from Sunward Aerospace:





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- Fin Strengthening: Technique learned from Inflight Rocketry:





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- Steel Leader Technique from Fat Cats:





ESSENCE'S MODEL ROCKETRY REVIEWS & RESOURCES

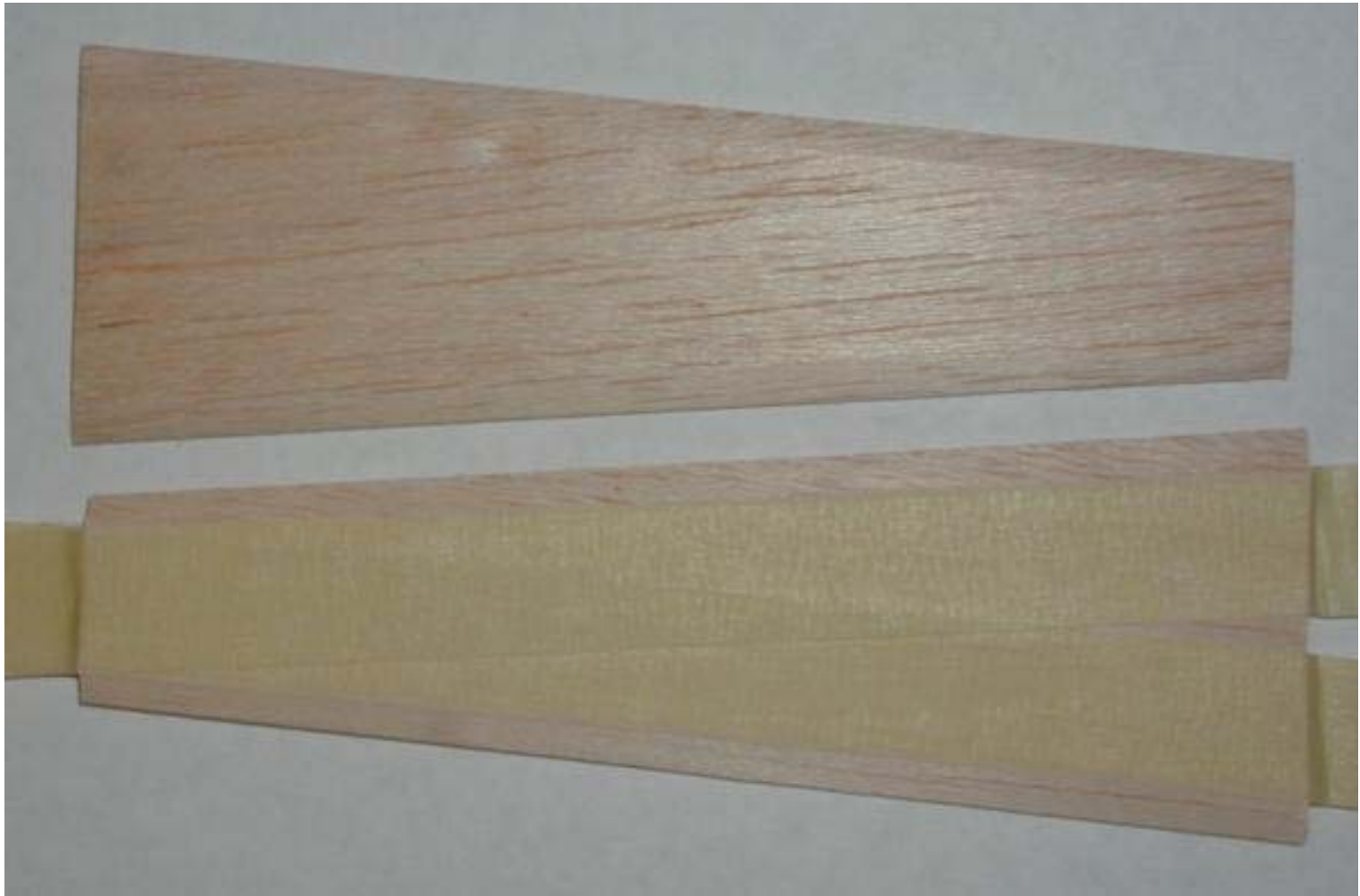
- Centering Ring Technique learned from Cycline3:





ESSENCE'S MODEL ROCKETRY REVIEWS & RESOURCES

- Air foiling a Fin: Technique learned from FlisKits:







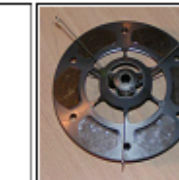


ESSENCE'S MODEL ROCKETRY REVIEWS & RESOURCES

- Some Comparison Articles:

Comparison of U.F.O.-Type Rockets

Comparison: [All](#) [Previous](#) [Next](#) [U.F.O.-type Rocket Kits](#)

					
	Art Applewhite - Flying Saucer 18mm (6")	FlisKits - Pheord X150	Model Minutes - Flying Spider	Estes - Snitch	Quest - U.F.O.
Dimension	3" x 6"	3.2" x 6"	4" x 7.75"	3.25" x 8"	3.25" x 8"
Weight (my kit)	0.8 ounces	0.9 ounces	1.2 ounces	2.0 ounces	2.7 ounces
Fins	3	5	8	3	3
Fins	Basswood	Balsa	Foam/Paper	Plastic	Plastic
Mount Tube	18mm	18mm	18mm	18mm	18mm
Motor Tube	Kraft Paper	Kraft Paper	Cardstock	Plastic	Plastic
Positive Motor Retention	Yes	No	Yes	Yes	Yes
Motor Retention	Hook	Friction	Hook	Cap	Hook
Shock Cord	NA	NA	3/32" Rubber	NA	NA
Shock Cord Mount	NA	NA	3-Fold	NA	NA
Parachute	NA	NA	9" Plastic	NA	NA



- Rocket Articles in EMRR's "MOPS" Section
 - "M"odifications (Mods)
 - Changes made to any as-sold kit show flexibility and capability (two-stage Estes Fat-Boy – Plastic Model Conversion)
 - "O"ut of Production (OOP)
 - eBay purchases and cloning bring back some of the favorites (Centuri Engineering Co. S.S.V. Scorpion)
 - "P"lans
 - From Art Applewhite to Shrox... some very cool designs out there! (try an Essence Aerospace Technology 18mm Lambda Shuttle)
 - "S"cratch Builds
 - Extensive creativity in many areas including launch systems, pads and controllers. Electronics and some of the best rocket designs in existence.
 - Level 3 Certification Articles have a home here



M.O.P.S.

Conversion Kit-Bashing Recycles

Cloning

Electronics

- [Cluster](#)
- [Downscales](#)
- [Electronics](#)
- [Futuristic](#)
- [Launch Equipment](#)
- [Multi-Staged](#)
- [Upscales](#)





Tsuru

Contributed by Geof Givens

The Tsuru marks the apex of 23rd century Japanese fighter craft. It was named after the peaceful and auspicious white crane, although the sight of this bird on your tail is enough to strike fear into the hearts of most adversaries.





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- Other Geof Givens' Designs



Titan Interceptor



Dark Matter Driftship



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Sweat-Stained Clifton Tracking Station Hat of Death

Contributed by Dick Stafford

This is a 29mm UFO-type rocket made from an old hat. The hat is removable in case I forget a ball cap - wouldn't want to sunburn the top of my head, ya' know.



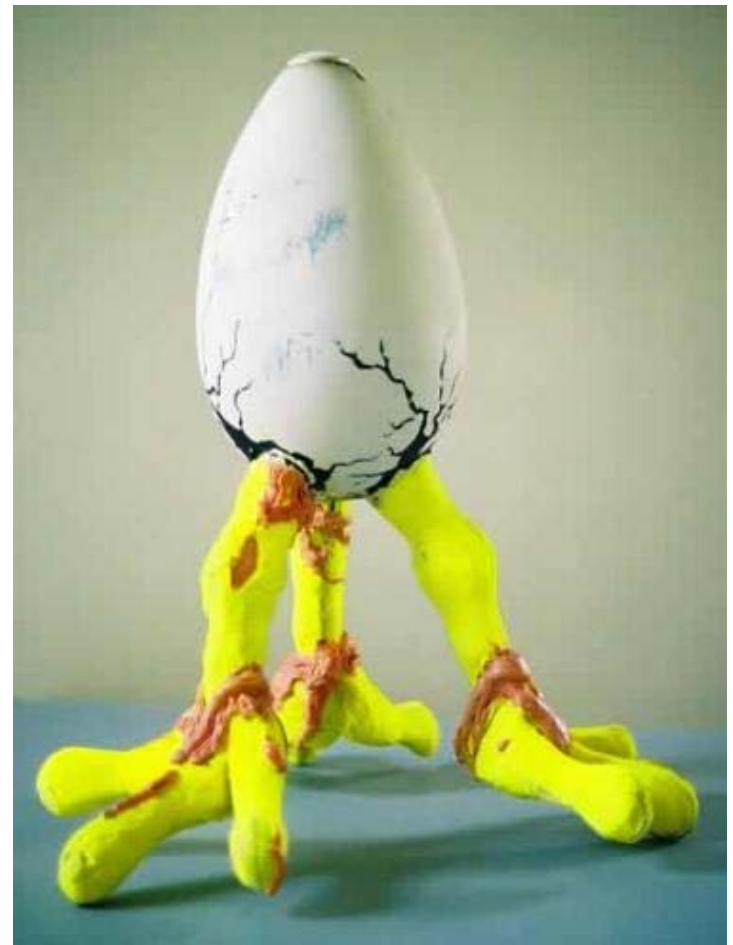


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Los Alamos Chicken

Contributed by Jeff Lane

A large plastic Easter egg with nuclear waste-colored legs bustin' out. Since it's from Los Alamos, it's a mutant with three legs.



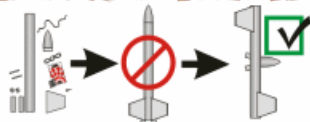


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Land Shark

Contributed by Susan DeBerg

Deuce-Bash





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Plastic Model Conversion (PMC) 21st Century Toys - F-104 Starfighter Contributed by Dick Stafford





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TOGinator

Contributed by Boris Katan

Late 2006 I bought and built a FlisKits US TOG. Futuristic and very cool looking, it flies on D12-5 engines very nicely to somewhere around 500ft. I knew that I had to build an upscale one day.





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LEVEL 3 CERTIFICATION

Martian Madness

Contributed by Bob Hart

This project has consumed more time than I ever imagined, but it looks like I'm finally ready. I chose the name "Martian Madness" because several of us in the club are "Marvin the Martian" fans and I thought it would make for an interesting paint job.





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LEVEL 3 CERTIFICATION

Temporary Insanity

Contributed by Cliff Oliver

- The basic dimensions are:
- Length: 9 feet 10 inches
- Diameter: 7.51 inches
- Launch weight: 45 pounds
- 98MM motor mount / 75MM adaptor





- Tips, Techniques, and Tools
 - Tips/Hints
 - Rocket Specific Tips are attached to specific rocket's reviews/articles
 - General Tips
 - Techniques
 - Featured Tips cover a large variety of topics... all have pictures
 - Tools
 - Series of online calculators and tools



ESSENCE'S MODEL ROCKETRY REVIEWS & RESOURCES

- What you will find in Featured Tips:

Featured Tips

[All](#) [New](#) [Submit \(General\)](#) [Submit \(Rocket Specific\)](#)

Building/ Finishing Tips

[Body Tubes](#)
[Fiberglassing](#)
[Finishing](#)
[Fins](#)
[Glue](#)
[Modifications](#)
[Nose Cones](#)
[Repairs](#)
[Spirals](#)

Flight/ Recovery Tips

[Flight](#)
[Igniters](#)
[Launch](#)
[Launch Rods](#)
[Motors](#)
[Recovery](#)
[Tracking/ID](#)

General/ Other

[General](#)
[Safety](#)
[Scale Up/Down](#)

EMRR's Tips

[Finishing Tubes](#)
[Finishing Nose Cones](#)
[Altimeter Bay](#)
[ProBond Wood Glue](#)
[Polyurethane Glue](#)
[Quick Grab Glue](#)
[Walmart Paint](#)



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Rocket Specific Tips:

Semroc Saturn 1-B



ESSENCE'S MODEL ROCKETRY REVIEWS					
CONSTRUCTION:	1	2	3	4	5
FLIGHT/RECOVERY:	1	2	3	4	5
OVERALL:	1	2	3	4	5

([Contributed](#) - by Frank Casey - 12/25/06)



**Enter your
Opinion**

GUEST's OPINION:

03/08 - "Nice rocket to have, great price. Looks good on display, on the pad, and especially in flight. Just take your time building it." (R.M.G.)

GUEST's OPINION:

02/07 - "The Estes original Saturn 1-B is also packed inside a box." (D.W.M.)



**Enter a Tip
for this Rocket**

SPECIFIC ROCKET TIP:

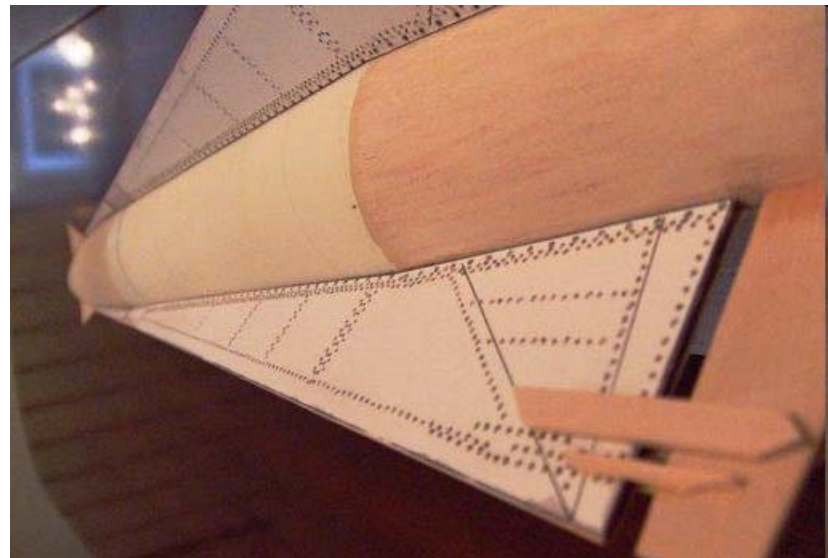
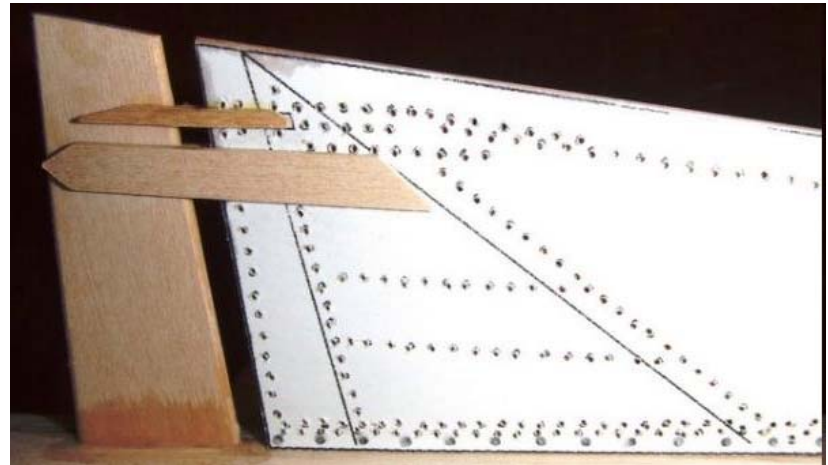
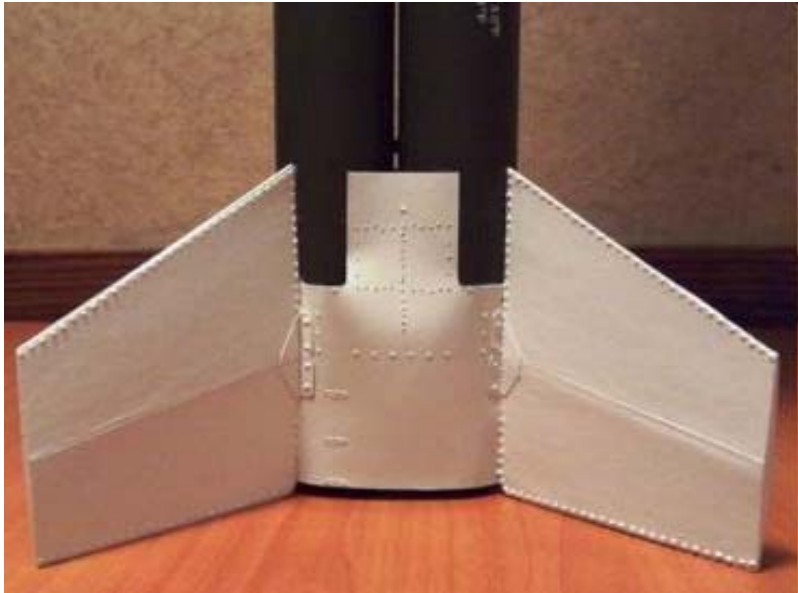
07/07 - "After a number of successful flights with my Semroc Saturn 1B I had a bad flight which caused me to make two small changes to the recovery setup. I launched in 5-10 mph gusts, not a good idea to start. chute deployment was perfect but with the high winds the main body on it's giant chute started to drift as did the small capsule on it's chute. Suddenly the main body separated from the main chute and came down in a flat spin, completely crushing one fin and ripping another off of the main body. The capsule just floated away never to be seen again. Upon close examination I found that the shock cord melted where it connects to the chute tube. That's very close to where the hot ejection gas hits the tube. I assume that after several flights the cord just degraded. I don't think wadding is able to completely protect the cord at it's connect point to the tube. My modifications are two-fold and very simple. 1. I will attach the cord higher up on the chute tube where it will be better protected and 2. I will tether the capsule to the end of the main body shock cord and use only one chute. This way I will be sure to get everything back together. It's a great rocket and a real crowd pleaser! Semroc really knows how to make a winning kit." (F.C.)



ESSENCE'S MODEL ROCKETRY REVIEWS & RESOURCES

Scale Rocket Rivets and Bolts

By Chan Stevens





ESSENCE'S MODEL ROCKETRY REVIEWS & RESOURCES

Aligning Multiple Fins By Geoffrey Kerbel





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More...

37. [Motors](#)

Featured Tip: Adding a Motor Retention System - I have read a lot of material on mid and high power rocket construction and decided on the following plans to add a good, solid motor retention system to my new LOC Precision Graduator... [more](#)



38. [Motors](#)

Featured Tip: Low Cost Adapters for Low Power Motors - This article describes some low cost, do it your self, options for putting smaller motors in upsized motor mounts. One popular modification when building rockets is to upsize the motor mount. Upsizing the mount provides more options later for motor selection. Those upsized motor mounts provide the ability to scrape... [more](#)



39. [Motors](#)

Featured Tip: Brand's Expendable Extendable Motor Retainer ("BEEMR") - There are a number of very good HPR motor retainer designs available, and I have used some of them, including the famous Kaplow Clip (homemade) and the beautifully machined (and pricey!) Aero Pack products. But in getting involved with very stubby large rockets (my recent tubefin research), I found an unmet need in the retainer arena: a need for an adjustable retainer that holds in big motor casings that stick out 2 to 6 inches or more behind the rocket... [more](#)





ESSENCE'S MODEL ROCKETRY REVIEWS & RESOURCES

And More...

7. [Finish](#)

Featured Tip: Paint Design Effect Finish (Stars) - Most rockets rely on decal to give colour, and these can chip or flake with time. Painting in a design is time consuming, and you are usually limited to straight lines etc from the masking tape... [more](#)



8. [Finish](#)

Featured Tip: Using Reflector Tape - Are you looking for a low-cost, light-weight way to make parts of a model light up and glow? Do you want to make a lost rocket easier to find at night? Are you having troubling painting the interior of tube fins?... [more](#)



9. [Finish](#)

Featured Tip: Painting just the tip of a nose cone - On occasion you need to paint just the top of a nose cone. Maybe you'd like to give it a silver or gold tip etc. This method will work for any size assuming you have... [more](#)





- Contests:
 - EMRR Challenge
 - Virtual Rocket Contests
 - Photo Contests
 - Design Contests
 - Rocket Video Contests
 - Other
 - Youth Participation
 - Stomp Rocket




ESSENCE'S MODEL ROCKETRY REVIEWS & RESOURCES

• What you will find in Contests:


Photo

- » [Scale](#)
- » [Best Finish](#)
- » [Youth Participation](#)
- » [Launch](#)
- » [Fantasy](#)
- » [Caption](#)
- » [Quantity](#)
- » [Odd-Rocs](#)
- » [The Launcher](#)
- » [Show Us the Blue](#)
- » [On Display](#)
- » [Caption - Redux](#)
- » [NAS/MonsterROC](#)
- » [Nekkid](#)
- » [Rocket Pets](#)
- » [Uniquely Finished](#)
- » [Odd-Rocs 2008](#)
- » [Before and After](#)
- » [Rocket Family](#)

( Ends 10/01)

EMRR Challenges

- » [2005](#) (Comparison/Paper)
- » [2006](#) (Cluster/PMC/Kitbash)
- » [2007](#) (Retro/Junk/Glider)
- » [2008](#) (Scale/Youth)
- » [2009](#) (Staged)


( Ends 12/15)

Virtual Rocket

- » [1st Anywhere!](#)
- » [2-Stage](#)
- » [Egg-Payload](#)
- » [Newbie/ Tri-Roc](#)
- » [Football Season](#)
- » [Longnecks](#)
- » [Mach 1-2-3](#)
- » [Reunion](#)
- » [Iron Rocketman](#)
- » [Big and Fat](#)
- » [More Power to 'EM](#)
- » [Rocket Camp](#)
- » [NASROC](#)

Other Fun Ones

- » [Slogan](#)
- » [Stomp Rocket™](#)
- » [Name and Story](#)
- » [Mars Endurance Base](#)
- » [Rocket Proverbs](#)
- » [Company Logos](#)
- » [Nay-Sayers](#)
- » [Youth Participation](#)
- » [Elevate Eleven](#)


( Ends 07/20)

Video


- » [Rocket Video](#)
- » [Rocket Video - 2008](#)

Design

- » [BRS DesCon](#)
- » [Box O' Parts](#)
- » [09 Box O' Parts](#)

( Ends 7/06)

- » [Design this Spaceship](#)
- » [07 Design this Spaceship](#)
- » [08 Design this Spaceship](#)
- » [09 Design this Spaceship](#)

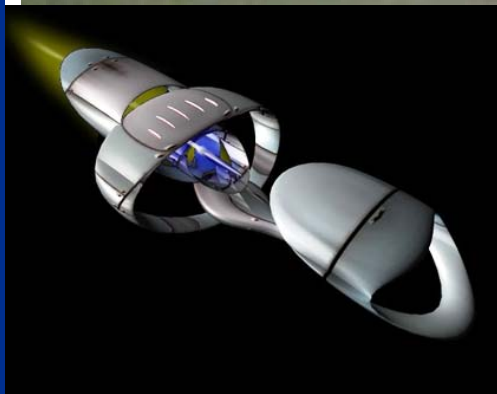
( Ends 11/1)



ESSENCE'S MODEL ROCKETRY REVIEWS & RESOURCES

Winners and Favorites from Design this Spaceship Contests:

The Annulus - Drake "DOC" Damerau (Winner 2006 – First Ever)



← From this, he created this ↑

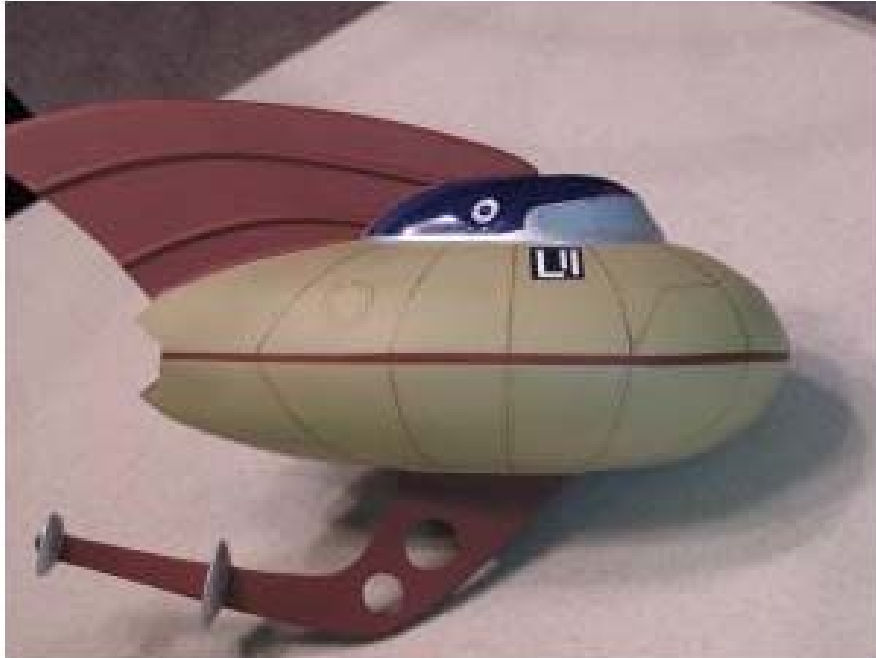


ESSENCE'S MODEL ROCKETRY REVIEWS & RESOURCES

Winners and Favorites from Design this Spaceship Contests:
Neutron – Ray King (Winner 2007)



← From this, he created this





ESSENCE'S MODEL ROCKETRY REVIEWS & RESOURCES

Winners and Favorites from Design this Spaceship Contests:
Falling with Style – Ray King (Winner 2008)



← From this, he created this ↑



ESSENCE'S MODEL ROCKETRY REVIEWS & RESOURCES

Winners and Favorites from Design this Spaceship Contests:

Twin Jet TR5 Fighter – Matt Gillard (EMRR Favorite)



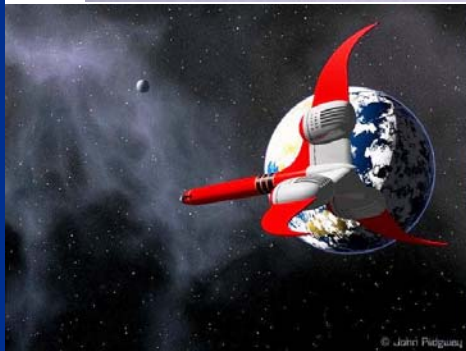
← From this, ↑
he created this





ESSENCE'S MODEL ROCKETRY REVIEWS & RESOURCES

Winners and Favorites from Design this Spaceship Contests:
The MicroGlia – Kathy Miller (EMRR Favorite)



← From this, she created this ↑



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Stage-Bash: Combine any two purchased single-stage rocket kits into a rocket that is at least 2-staged using only the parts from within the two kits (kitbash). Design, Build and Fly* and write an article on this rocket.

Quest Falcon + Estes Eliminator



**Quest Quasar +
Estes Cosmic Cobra**

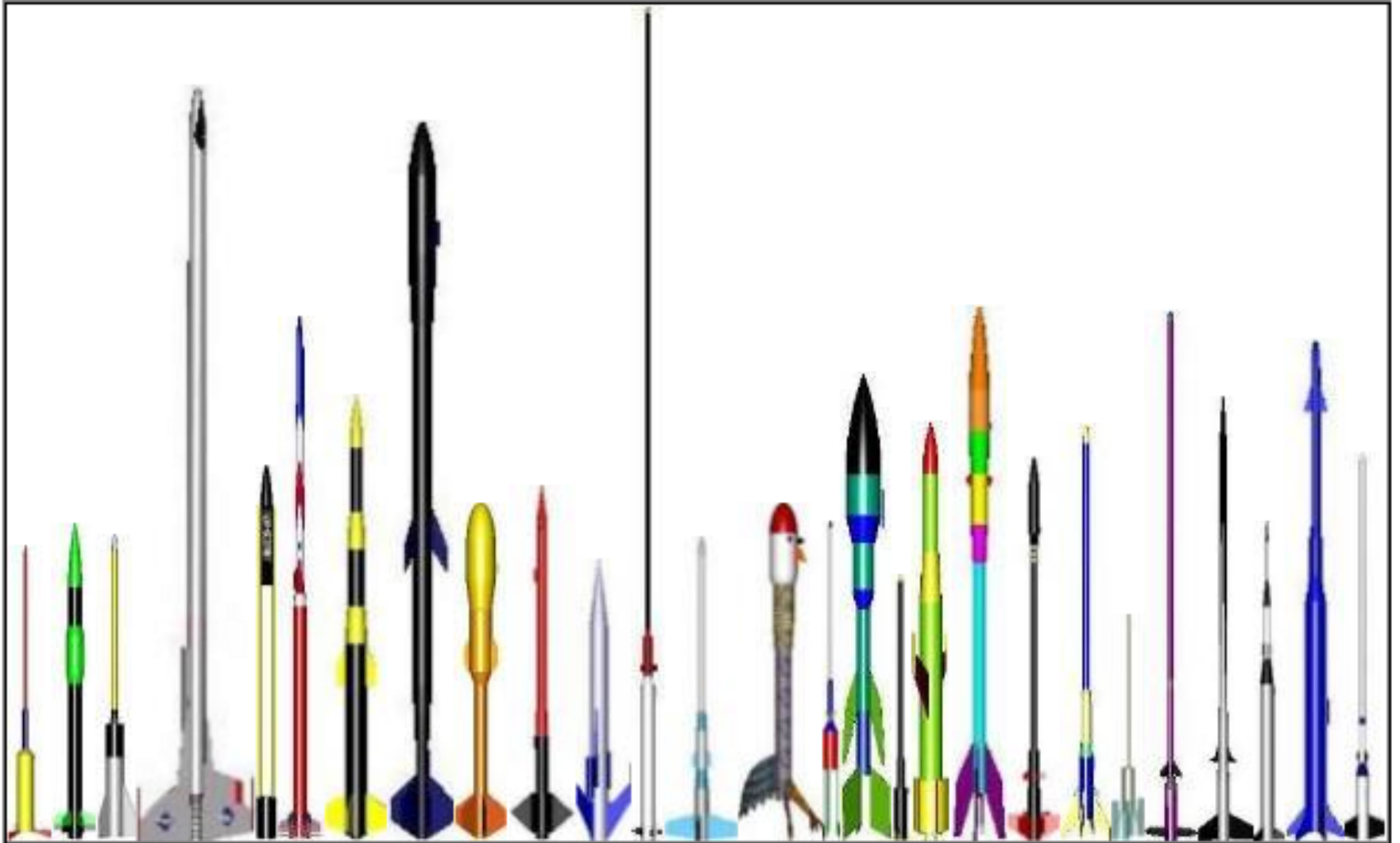
Der Red Max Army Patriot





ESSENCE'S MODEL ROCKETRY REVIEWS & RESOURCES

Virtual Rocket Contests





ESSENCE'S MODEL ROCKETRY REVIEWS & RESOURCES

Rocket Video Contests





- Contests (Current):
 - 2009 EMRR Challenge
 - Milestones for the year... 2009 Theme: Staged
 - Design this Spaceship Contest
 - Inspired by the Future of Space Travel
 - Rocket Family Photo Contest
 - Send in photos of your rocket family
 - Elevate Eleven
 - EMRR's 11th year with an Apollo 11's 40th Anniversary inspired prize



- Resources

- Largest RockSIM Design library
- New SpaceCAD library
- Who's Who in Rocketry Registry
- Rocket Glossary
- Manufacturers Recommended Motors Database
- Center of Pressure Database



ESSENCE'S MODEL ROCKETRY REVIEWS & RESOURCES

RockSim Library



[IMPORTANT ROCKSIM MESSAGE - PROBLEMS DOWNLOADING?](#)

RockSim is a rocket design and simulation program from [Apogee Components](#) for the Windows & MAC operating systems. It can be used to design models from tiny sizes to ultra-huge monster rockets!

[All](#) [Kits](#) [Modifications](#) [OOP](#) [Plans](#) [Scratch](#) [WhatIf](#)

[RockSim ZIP Packets](#)

RockSim Motor Files: ● [01-09-2007: Every Certified Rocket Motor \(NAR/CAR/TRA\)](#)

RockSim OOP or Non-Certified Motor Files: ● [AT OOP EconoJets & G80](#) ● [AT F101, G125](#) ● [DPS](#) ● [FSI](#) ● [RocketFlite](#) ● [Vulcan](#)

RockSim Parts Files: ● [FlisKits, Semroc, BMS Parts](#) ● [LOC+ Parts](#)

Configuration

[Ball-Nose](#)
[Cluster](#)
[Competition](#)
[Finless](#)
[Funnel](#)
[Longneck \(~30:1 len:dia\)](#)
[Payloader](#)
[Scale](#)
[Sounding](#)
[Staged](#)
[Stubby \(10:1 len:dia\)](#)
[Tube-finned](#)

Recovery

[Helicopter](#)
[Parachute](#)
[Streamer](#)
[Tumble](#)

Power

[LPR \(A-E\)](#)
[MPR \(F-G\)](#)
[HPR\(H+\)](#)

Motor Size

[Micro Maxx \(6mm\)](#)
[Micro \(10.5mm\)](#)
[Mini \(13mm\)](#)
[18mm](#)
[24mm](#)
[29mm](#)
[38mm](#)
[54mm](#)
[75mm](#)
[98mm](#)



ESSENCE'S MODEL ROCKETRY REVIEWS & RESOURCES

Flis, Jim



(New Hampshire / USA) - Last update: 2008

AKA: FlisKits

Club Member of: NAR, CMASS

Favorite Rocket: FlisKits Praetor

Favorite Quote: "Any sufficiently advanced technology is indistinguishable from magic."



Home Page: [Click Here](#)



Club Site: [Click Here](#)



Manufacturer of model rocket kits and accessories.

Teach model rocketry and many other subjects with the Boys & Girls Club after school program.

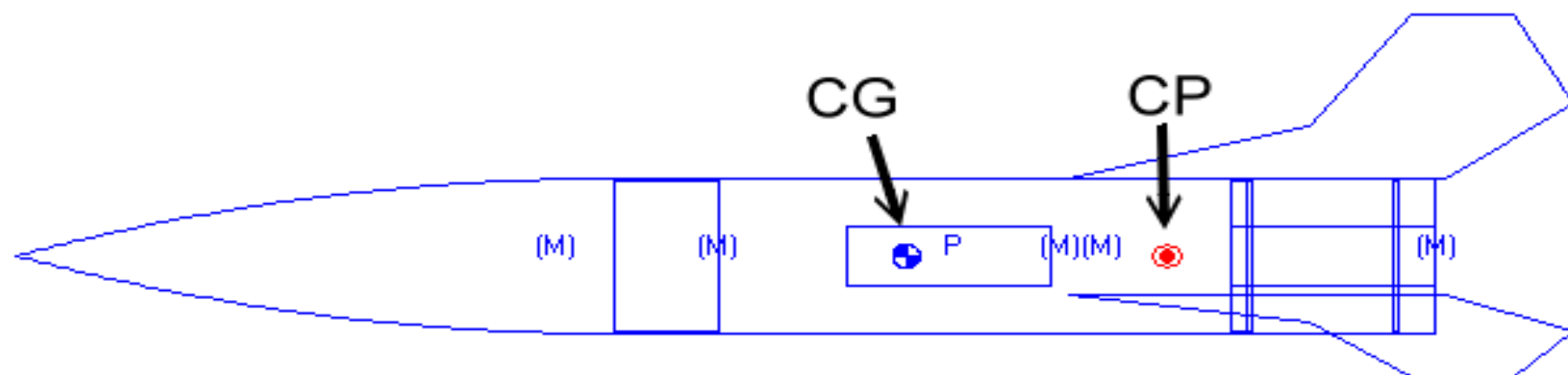
Have been involved in model rocketry since 1963 (Sky Hook) and have been scratch building since about 1969. Still enjoy model rocketry as there is still so much to learn and yet to do!



Center of Pressure (CP) Library

Center of Pressure (CP) - The point at which the aerodynamic lift on a rocket is centered.

Center of Gravity (CG) - The point at which a rocket balances when completely prepped for flight.



For your model to be stable, you need the CP to be below (aft) of your CG. Typical rule of thumb is to have the CP "1 caliber" behind the CG (where 1 caliber is the diameter of the main body tube). The further behind the CG you place the CP, the greater the stability. However, an over-stable model has its own problems... An over stable model will be greatly influenced by wind and cross-breezes. An over stable model will have a great tendency to come off the launch pad at a sharp angle if there is a breeze at the launch site, for example.



Manufacturer's Recommended Motors

[List All Manufacturers](#)

Aerotech Aerospace

ROCKET	RECOMMENDED MOTORS
Arreaux	D13-4W, D24-4T, D15-4T, E18-7W, E11-5J, E28-7T, F24-7W, F12-5J, F39-6T, E16-7W, E23-5T, F40-10W, F22-7J, F52-8T, G33-7J, G64-10W, D21-4T, E15-7W, E30-7T, F20-7W, F23-7FJ, F25-9W, F50-9T, G35-7W, G38-7FJ, G40-10W, G80-10T
Astrobee-D	F40-4W, F52-5T, G64-4W, F50-4T, G35-4W, F38-4FJ, G40-4W, G80-4T
Barracuda	E18-4W, E11-3J, E28-4T, F24-4W, F12-3J, F39-6T, E16-4W, E23-5T, F40-7W, F22-5J, F52-8T, G33-7J, G64-10W, E15-4W, E30-4T, F20-4W, F23-4FJ, F25-6W, F50-6T, G35-7W, G38-7FJ, G40-10W, G80-10T
Cheetah	D13-4W, D24-4T, D15-4T, E18-7W, E11-5J, E28-7T, F24-7W, F12-5J, F39-6T, E16-7W, E23-8T, F40-10W, F22-7J, F52-8T, G33-7J, G64-10W, D21-4T, E15-7W, E30-7T, F20-7W, F23-7FJ, F25-9W, F50-9T, G35-7W, G38-7FJ, G40-10W, G80-10T
G-Force	G35-4W, G38-4FJ, G40-4W, G64-4W, G80-4T
HV ARCAS	E28-4T, F24-4W, F39-6T, F40-7W, F52-8T, G33-7J, G64-7W, E30-4T, F20-4W, F23-4FJ, F25-6W, F50-6T, G35-7W, G38-7FJ, G40-7W, G80-7T
ISQY Tomahawk	D24-4T, E18-7W, E11-5J, E28-7T, F24-7W, F12-5J, F39-6T, E16-7W, E23-5T, F40-10W, F22-7J, F52-8T, G33-7J, G64-10W, D21-4T, E15-7W, E30-7T, F20-7W, F23-7FJ, F25-9W, F50-9T, G35-7W, G38-7FJ, G40-10W, G80-10T
Initiator Starter Set	E18-4W, E11-3J, E28-4T, F24-4W, F12-3J, F39-6T, E16-4W, E23-5T, F40-7W, F22-5J, F52-8T, G33-7J, G64-7W, E15-4W, E30-4T, F20-4W, F23-4FJ, F25-6W, F50-6T, G35-7W, G38-7FJ, G40-7W, G80-7T







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#

3FNC		Slang for a basic rocket: "3 Fins and a Nose Cone".
3-Fold Method		The method Estes (and others) use to attach shock cords to the inside of an airframe; consists of a tapered strip of paper that is folded over on itself, with glue and the shockcord. See Three-fold attachment .
4FNC		Slang for a basic rocket: "4 Fins and a Nose Cone".
80/20		A company that makes aluminum extrusions that work well as DIY rails; their "1010" extrusion is compatible with standard railbuttons (BlackSky and railbuttons.com).

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A		
A.B.M.R.		The public domain alt.binaries.models.rockets newsgroup; this is the place to post binaries (graphics, movies, etc)
Ablation		The flaking and vaporization of material undergoing severe heating due to aerodynamic drag.
Abort		Failure of an aerospace vehicle for any reason which prevents completion of its mission. Similar to "scrub", which involves a decision not to launch.
Abrasive		Natural or man-made materials used for grinding, sanding or polishing a surface.
ABS		Acrylonitrile-Butadiene-Styrene; a tough, heat-resistant and impact-resistant thermoplastic; used for telephone housings, luggage, sporting helmets, pipe fittings and automotive parts.
AC		See Aerodynamic Center
Accelerometer		An electronic device for detecting the presence of high acceleration. An accelerometer can be used for flight.shtmla gathering, or for controlling



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- The primary benefit of EMRR comes from the shared experiences of our guest contributors
- Special Thanks to:
 - Lance Alligood – 90% of the review/article formatting
 - Dick Stafford – Manages numerous databases, sounding board
 - James Gartrell – EMRR's first-ever Public Relations man
 - Anthony Jackman – review/article formatting (not pictured)
 - Many, many others who have supported the site at various times and various ways





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For each participant that scores **31** points or more will be entered to win the grand prize:

1 PML Thunder ~N~ Lightning kit w/o electronics - valued at ~\$300)

For each additional 4 points over 31 each participant will gain an addition entry.

The maximum points available is 41, therefore, the maximum entries for the grand prize is 3.

BONUS: All participants that reach the GOLD level will receive the next version of "EMRR Calendar"***



valued at ~\$150)

BONUS: All participants that reach the SILVER level will receive the next version of "EMRR on CD"***

For each participant that scores **27** points or more will be entered to win the runner-up prize:

1 each of the Semroc Centaur, Firefly, Texas Firefly, Arcon-Hi, Engine Mount Booster-16 with a Centurion PLUS a \$50 Gift Certificate to use at Semroc -



For each participant that scores **23** points or more will be entered to win the second runner-up prize:

1 each of the Squirrel Works Cloud Warrior and The Tuber - valued at ~\$50)

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