

mn-rocketry.net

MASA

Established January 1998
NAR Section 576



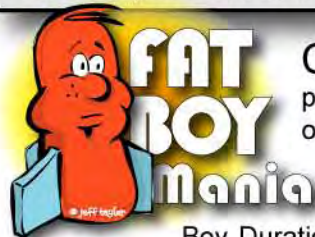
ARK IV Senior Prank by Ray King



No job is complete until the paperwork is properly distributed

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Congratulations to all who participated in Fat Boy Mania on Saturday May 31.

Buzz McDermott was the contest director for the Fat Boy Duration Contest. Entries included five seniors and only one junior (Scott Gleason). Buzz decided to combine both classes into one and let Scott show the grown-ups how to do it. Scott's launch on a C6-5 blew the doors of the competition with a time of 64.93 seconds! His secret? A 32" Dynastar parachute. Second place went to David Whitaker with a time of 34.13 seconds, and third went to Ray King with 24.42 seconds.

Andy Heren was the contest director for the Fat Boy Beauty Contest. With about 8 entries in this static contest, members voted with secret ballots for their favorites. First place went to Dwayne Shmel for his black and yellow bee Fat Boy. Second place went to Carol Marple for her October Sky Fat Boy (complete with Homer Hickam and the Rocket Boys' autographs). Third place went to David Whitaker for his baby blue Fat Boy.

Everyone has a photographic memory. Some just don't have film.

The Senior Prank was a brainstorm while I was in my favorite room of the house trying to come up with a clever submission to the Odd-Rocket Contest. I began focusing on the toilet paper sitting next to me on the wall for a couple of reason, but I won't go into that. I realized that although I had seen a number of rockets made from the toilet paper tube, I had never seen one with the toilet paper still on the tube – so I decided I would build a rocket that could launch 3 rolls, eject them and TP the launch area.

Components:

- 1 Sheet of Foam Poster board (2'X3')
- 1 Sheet (14" x 14") Std Poster board or card stock
- 1 - 8" BT 50 Tube
- 1 - 24" BT 50 Tube
- 1 - BT 50 Centering Ring (Internal)
- 1 - 7.25" BT 80 Tube
- 2 - Centering rings (BT80 to BT50)
- 1 - 18mm Engine Tube
- 2 - Centering rings (Engine tube to BT 50)
- 1 Used 18mm Engine casing
- 36" 400# Kevlar Shock Cord
- 24" 3/8" Elastic Shock Cord

Engine Mount Construction:

The engine mount is made from the 8" BT 50 tube with the BT80 to BT50 centering rings mounted. The ring closest to the engine is mounted 1.25" from the end. The other one is mounted 1.5" inches from the opposite end. Before mounting I notched the top one with a hole punch near the inside diameter to allow the shock cord to pass through. In addition, I punched a hole in each centering ring roughly in the center of each ring.

Continued on Page 2



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Senior Prank Continued

These holes will be used for the launch rod so they must lineup when attached to the BT 50 tube. The last step is to attach the elastic shock cord. I tie a loop in the end and then do a full wrap around the tube and push the other end through the notch in the upper centering ring. I glue the full wrap of elastic to the tube to ensure it does not get pulled through.

Fin Construction:

Fins are cut from foam poster board. See Fin Template.

Main Body Tube Assembly:

Start by cutting the disk (Template A) out of foam board and then cut 3 disks (Template B) from the foam board.

Mount the fins to the BT80 tube 120 degrees apart. Now mount the disk (Template A) to the top of the BT80 tube. Reinforce the all the joints with bead of epoxy. Glue the 3 disks together and wrap the end of the Kevlar shock cord $\frac{1}{2}$ way around the 3 disk assembly and glue in place (see picture). The cord should only cover the center hole on one side the other side should be uncovered. This sub-assembly can now be inserted into the main body tube. Apply a liberal amount of glue to the side of the sub-assembly where the Kevlar shock stretches across the hole. Now add a bead on the inside of the tube and slide the sub-assembly down the tube until it bottoms. The Kevlar shock cord should extend out the bottom of the tube. Clean up any excess glue on the inside of the body tube. Attached the Kevlar and Elastic shock cords.

Next, epoxy 2 centering rings to an 18mm engine tube one on each end. Now glue a used engine into the engine tube. Now epoxy the engine tube sub-assembly to the center of the disk mounted on top of the main body tube assembly.

Glue the 24" BT50 tube to the used engine sub-assembly. Finally, glue the centering ring inside the top of the BT 50 tube. This is used to provide some rigidity at the top of the top.

Nose Cone Construction:

Start by cutting the disk (Template A) out of foam board. Then cut the nose cone out of regular poster board (Cut out a 13 inch circle from, mark the center, and then cut 120 degrees out of the circle). Form the poster board into a cone and glue the seam. Now glue the foam disk to the underside of the cone, making sure the launch rod holes line up. I suggest adding a bead of epoxy around the joint between the cone and foam board and a thin coating on the point of the nose to protect it during landing. Finally, I added a reinforcing ring where the launch rod comes out of the cone.

Painting:

This rocket has a no frills paint job of Blaze Orange on the nose cone and lower section.

Flight Prep:

This is a little tricky so follow these carefully. First, install the selected engine into the engine tube sub-assembly; taping it in place. Now add some wadding (Dog Barf) to the opposite side of the engine tube. The Elastic and Kevlar shock cords should be stuffed in on top of the wadding. Roll the parachute and

place between the 2 centering rings. Slide a spare launch rod through the holes in the centering ring of the engine sub-assembly, making sure it slides nicely. Now slide the launch rod through main body tube assembly and slide the engine sub-assembly into the main body tube. Check the rod it, should still move freely. Now the toilet paper can be slid over the tube and rod. Next the nose cone can be installed. The rod should move freely. Mount the rod into the launcher add igniter and get ready for launch.

Flights:

This is a fun rocket to fly – I have found that D engines don't really have enough thrust, but with a D12-0 the rolls eject on an upward trajectory which is pretty cool. Launching with an E9-4 works pretty well.

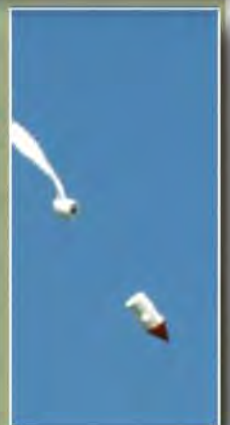
Pros/Cons:

Pros - Rocket flies well, pretty easy to build, and a great crowd pleaser.

Cons – Needs more power – D & E's just don't get the attitude I would like to see.

Overall:

This is a fun rocket and worth the time if you want to build something out of the ordinary that usually catches everyone's eye.



2008 Launch Windows

Subject to Change - Check MASA Website for updates

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

MASA Summer Picnic

Saturday, July 19 - 2:00 pm to 8:00 pm
Location: Elk River VFW

Golden Scout Launch!

MASA July Launch *

Saturday, July 26 - 9:00 am to 4:00 pm
Location: Nowthen
Themes: Clusters

NARAM 50

www.narhams.org/naram50/
July 26 - August 1
The Plains, Virginia



**NAR
NATIONAL
EVENT**

MASA August Launch *

Saturday, August 23 - 9:00 am to 4:00 pm
Location: Nowthen
Themes: Multi-staging
Events: Annual UFO and Comanche-3 Drag Races

MASA September Launch *

Saturday, September 27 - 9:00 am to 4:00 pm
Location: Nowthen
Themes: Scale Rockets

MASA October Launch *

Saturday, October 25 - 10:00 am to 4:00 pm
Location: Nowthen

MASA November Launch

Saturday, November 22 - 10:00 am to 2:00 pm
Location: Elk River VFW

* FAA waiver approved to 5500' MSL (about 4500' AGL)

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2008 Meeting Schedule

Subject to Change - Check MASA Website for updates

Unless otherwise specified, all meetings shall be held at the Science Museum of Minnesota in St. Paul, Classrooms 11 & 12

MASA July Meeting

See Summer Picnic in the 2008 Launch Window

MASA August Meeting

Thursday, August 7 - 7:00 pm to 9:00 pm
Topic: NARAM 50 in review

MASA September Meeting

Thursday, September 4 - 7:00 pm to 9:00 pm
LOCATION FOR SEPTEMBER MEETING IS TBD
Topic: Composite Fins by Rick Vatsaas

MASA October Meeting

Thursday, October 2 - 7:00 pm to 9:00 pm
Topic: TBD

MASA November Meeting

Thursday, November 6 - 7:00 pm to 9:00 pm
Topic: 2009 MASA Officer nominations

MASA Holiday Party

Date, Time and Location: TBD

**REMEMBER:
FLY SAFE OR STAY HOME**

Where are the MASA launch sites?

See www.masa-rocketry.org for details and directions

Nowthen Fricke Sod Farm

Southwest corner of Tiger St NW and 211th Ave NW - Nowthen

Elk River - Rogers VFW 5518

VFW Memorial Sports Complex 7350 Quaday Ave - Elk River

Important Notice to MASA Members Who Get The Planet Mailed to Their Home

All MASA members have the option of having a black & white printed copy of the MASA Planet newsletters mailed to their home by checking a box on their membership application. Starting in 2009, any members who choose this option will have to pay an extra \$6.00 in MASA dues to cover costs of printing and postage. The on-line version is still free (and in color!).



Remember to check out

www.masa-rocketry.org
for the latest Launch Dates, Meeting Dates and other Important News

The MASA Planet is the official newsletter of the Minnesota Amateur Spacemodeler Association. It is published bimonthly as a service to its members. MASA authors and photographers retain rights to their submissions, which are used by permission. Send submissions to jeff.taylor@mn-rocketry.net. The Planet is available in color on MASA's web site: www.masa-rocketry.org

If your email address, U.S. Mail address, or phone number changes: Please send notice of your change to masa@mn-rocketry.net. Include your name and old and new addresses. We depend on email for communicating important information. When an email address starts "bouncing", we lose contact with you.

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Continuing Tech Report

Baffles Part III - Larger Rockets

by Ken Jarosch

NAR 56442 Sr & TRA 10290

MEDI/MAXI MAGG, my first 5.5" rocket

Now the fun begins: Use the design criteria of Part 2 to build a modular labyrinth baffle/bulkhead design in a real High Power Rocket. Not just a MPR or LPR stuffed with an "H" motor, but a regulation HPR rocket; meaning over 53 oz. and one that requires you to be Certified to fly HPR.

The S.O.A. 2008 (70" x 4") in Part 2 used the cut down plan to get to the baffle/bulkhead fin can. In the 5.5" class you could do the same to the I-ROC, BIG NUKE or the MAGNUM. But for demo purposes I decided to do the flip side by using the build up plan. That would require a really short rocket as the base parts kit. In the 5.5" class that is the MINIE-MAGG while in the 7.6" range you would use the WARLOCK or possibly the DOOR KNOB.

The base parts kit to start out the 5.5" rocket is the MINIE-MAGG. LOC Precision calls this rocket the largest "G" rocket (37" X 5.5") available. That's true, but the minimum motor is the G80-4T. Even then they used some weight reduction techniques to get there. First they used a short nose cone of 13" versus the 21" unit for the other 5.5" rockets. The body length is only 24" and the wall thickness appears to be thinner than the normal 20" payload sections. I found that out to my surprise while sizing up the parts. The kit only uses 2 CTRs on a short 10" 38mm motor tube. The fins tabs are only just 1/16" through the wall and not down to the motor tube. The recovery system uses the elastic shock cord with the epoxied loop for the shock cord mount. All these issues and more would have to be addressed in this more advanced rocket.

I bought the MAGG and a 34" 38mm motor tube at HUB hobby. I wanted to get started and see what I needed to do. Many hobby stores no longer carry the HPR parts due to the Federal motor regs, so I had to order 2 payload extensions (PL-5.38), a Stiffy tube coupler (STC-5.38) and an extra 5.38" CTR from LOC Precision. One of the payload kits would provide parts for the outer chamber of the baffle/bulkhead and the 20" x 5.5" body tubing for the recovery section. The 37" basic kit plus the 20" recovery section would bring the MEDI-MAGG to a length of 57". The with the addition of a 20" payload extension the MAXI-MAGG would be full up at 77" x 5.5".

The TC-5.38 coupler from the first payload unit is 11" long. That's quite a big jump over the 6"x4" couplers used in the S.O.A. 2008 from Part 2. Still with that huge coupler the wall thickness appears to be the same as the smaller units. This allowed the tube to easily deform with a little pressure. For the first upgrade I ordered the "Stiffy" - Tube coupler Stiffener STC-5.38 to reinforce that 11" regular coupler to increase the lateral

support. After all, that unit was going to have the leverage and weight of 40" of heavy body tube (0.080"), bulkhead unit and the nosecone to support. The STC-5.38 "Stiffy" is 10-7/16" x 5.25" x 1/8" thick. This is quite a reinforcement as it alone weighs 8 Oz. It is 9/16" shorter than the regular coupler which allows for a 1/4" bulkhead at each end with a 1/16" recess at the head for epoxy filler. The 5.25" diameter fits loosely into the regular coupler making it easier to epoxy. It has deep spiral grooves in the sides to accommodate the extra epoxy needed. More on that later.

The bulkhead is 1/4" thick plywood and came with the standard 1/4-2.0 eye bolt. This really looked puny against that large bulkhead/coupler unit. The second upgrade was to replace the standard eye bolt. That eye bolt has a Safe Working Load of 80 lbs. Going to the next size of 5/16"-3.25 only increased the S.W.L. to 90 lbs. But I notice on the hardware store's chart that a Stainless Steel 5/16"-3.25 had a S.W.L. of 130 lbs so I went for that upgrade with 2 large fender washers.

The 11" 5.38 coupler (with the "Stiffy") forms the outer chamber of the labyrinth baffle/bulkhead. The 38mm motor tube and 3rd CTR forms the inner chamber. The middle tube is epoxied to the bulkhead and forms the middle chamber. This middle chamber is designed to be 10" long or 1" shorter than the outside coupler chamber. The body size choices for this middle chamber were 2.56", 3.00" or a 4.0 body section 10" long. I wanted the volume change through the chambers to be as linear as possible. I did the volume change math from the 38mm inner chamber (motor tube) to the middle chamber and then out into the large chamber (large coupler) The smoothest and balanced increase occurred with the use of the 3.00" body tube for the middle chamber. It just so happened I had a PL-3.00 which comes with a 10" section of BT-3.00. A perfect fit. I did a lot of test fitting along the way in this project. (See Photos 1 & 2)



Photo 1



Photo 2

Since this was a build up plan I would use the kit's 24" x 5.5" body tube and add the motor extension to that length. With the outer chamber (5.38 coupler) at 11" long, the motor tube (inner chamber) had to extend into the baffle 1" less or 10" in length. Also, half of the coupler would be in the fin can. That is 5.5" inside the body tube. The 3rd CTR would be placed at that location for the baffle base. A 10" motor tube extension from that point puts the motor tube 4.5" outside the body top. That would suggest a motor tube length of 28.5" if the motor tube were flush

Continued on the Next Page...



Baffles Continued

with AFT end of the fin can. Using the 3 CTR system, the rear and middle CTR's form a fin tab cage inside the body even though the fin tabs are only 1/16" long. But sizing up the screw length on the Public Missiles Motor Retainer, I realized for the rear CTR to be up against the fin tabs the AFT section of the motor tube would have to be limited to 5/16" exposure from the 3/16" thick rear CTR. That CTR would be 1" inside the rear body tube. That puts the end of the motor tube inside the body tube by 0.5". The overall length of the motor tube would then be a total of 28". The forward (3rd) CTR would be epoxied 10" back from the motor tube forward end. This CTR would be 5.5" inside the fin can with the motor tube exposed 4.5" above the fin can or 1" shorter than the baffle length. (See Photo 3)



Photo 3

Now I had the motor tube with the two working upper CTRs epoxied in place. The upper CTR and extended motor tube formed the inner chamber. The middle and outer chambers were sized. So once again we do a dry test fit. (See photos 4 & 5).



Photo 4



Photo 5

The next step was to epoxy the motor tube into the fin can tube. First I placed the motor tube in its exact position. I marked this location from the both the AFT and Forward body tube opening. I wanted to epoxy the area above and below the CTR correct position. I pulled the motor tube partly out to do the upper CTR area first. Then with the tube still partially out the back I swabbed the area just above the fin tab slot. I pushed the motor back in and rocked it in & out to set the epoxy. I finally set it to the correct position and left it harden. I used 30 minute epoxy. The reason for all this jockeying is that I did not want a fillet above the upper CTR that might prevent the baffle from seating correctly. Yet I wanted a full body/CTR bond. (See Photo 6)

With the motor tube secure in the body tube I returned to the assembly of the baffle itself. I mixed up a large batch of 30 minute epoxy and quickly swabbed the inside of the 5.38

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Photo 6

coupler. I finished as the mixing dish was getting warm. I set the coupler over the 1/4" bulkhead as the bottom spacer and proceeded to push the 8 oz. "Stiffy" into its place. It went in stiff due to setting epoxy but I got it in place and pushed out the bulkhead. I wiped a little excess off the bottom end but most stayed inside due to the loose fit.

Before I put the heavy hardware into the bulkhead I traced the position of the outside coupler/Stiffy on the bulkhead. I did the same with the BT-3.00 tube centered on the bulkhead. With these two circles traced on the blank bulkhead I marked off 12 spots midway between the two circles on a 30d angle of rotation. There I drilled the 12 vent holes for the gas. I inserted the 5/16-3.25" stainless steel eye bolt with a large fender washer on both sides of the bulkhead. I really tightened down on the nut to set the unit in place. I gave both sides 3 coats of epoxy. On the top side I covered the washer right up to the base of the eye. The under side I completely covered the bolt and nut. When this cured I gave the entire inside face of the bulkhead a coat of 30 minute epoxy. I did leave the area clear where I traced the BT-3.00 tube location. I wanted that level. I epoxied the lower inside end of the BT-3.00 tube and the center of the bulkhead again to just over lap the tracing of the tube. I propped up the bulkhead and placed the inner chamber (BT-3.00) in place to set. I later went back and epoxied the outside of this tube and bulkhead joint. I also went over the drill hole area again. At this point I had the three major baffle parts completed. The fin can with the extended motor tube, the coupler with the "Stiffy" reinforcement and the bulkhead/inner chamber unit were ready for final test fitting. (See Photos 7, 8 & 9).



Photo 7



Photo 9



Photo 8



Continued in the Next Issue

ASPLAC - Art's Single Pad Launch Controller by Art Gibbens

As is the case for most projects, this launch controller was inspired by something else I saw coupled with a great deal on the jumper pack used to provide the necessary oomph to get the job done. For those of you who have been to other launches where Alan Estenson has brought his 4 pad launch controller, you now know what first got me to thinking about upgrading my personal launch equipment. I've been using my Estes launcher over the years that I purchased back in 1972 that still works well enough, but I really wanted to get some distance between me and some of the larger rockets I hoped to be flying in the near future (as well as TARC rockets for HCA).

I really like the simplicity of the design for the old Estes controller and I just wanted to duplicate that on a slightly larger scale. As you can see from the electrical diagram this is a series style set up for the switches with the ground simply passing through the box.

The first thing that needs to be done is to get out the appropriate wood spades to drill holes in the plastic cover for the switches and LED. The cut-off/keyed switch has an oblong hole requirement. I drilled two holes and then trimmed between them with my Dremmel tool. Then I cut the 4 tabs off of the base of the plastic box with the same Dremmel tool. Lastly, in preparing the plastic weather proof box I drilled a hole in one of the sides for the electrical cords to pass through the water tight connector.

Next, I cut about a 2 foot length off of the male end of one of the 10 foot extension cords and about a 2 foot length off of the female end of the other 10 foot extension cord. Push these two shorter cords through the water tight connector and then tighten it down to hold it in place in the weather proof box. Strip back the insulation on the cords inside the box so you have some workable length for soldering in the switches and LED.

On the 8 foot male length of cord that is left over, strip down the insulation and solder on two alligator clips for igniter leads. On the 8 foot female length of cord, strip down the insulation and solder the cigarette lighter cord to it. I simply clipped off the green extra ground wire when not needed.

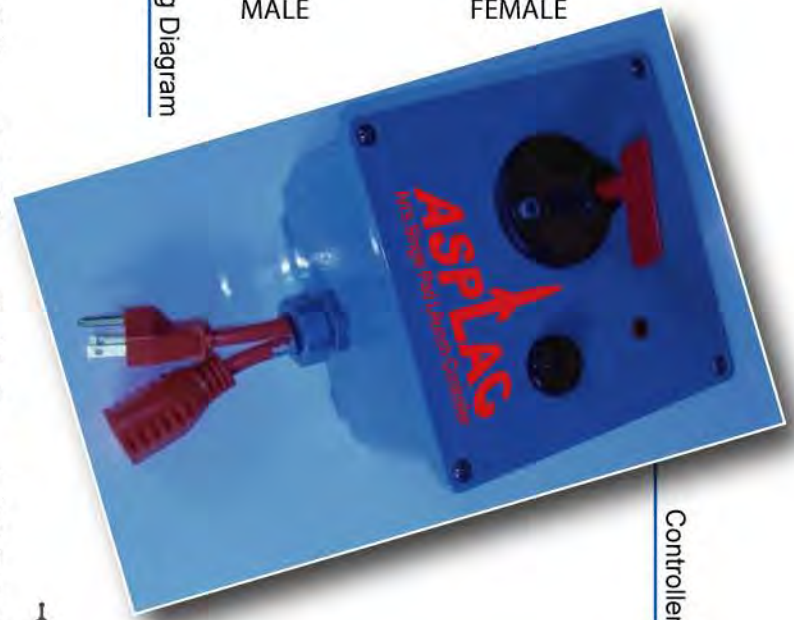
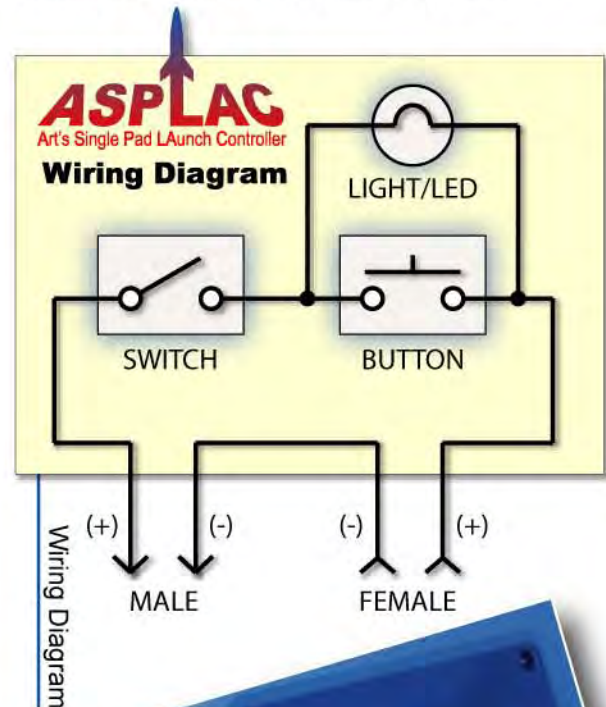
Install the two switches and LED with their respective fasteners to the lid of the box. Then wire the switches and LED for testing. Make sure that the positive wire coming into the box goes to the keyed switch from the male plug, thereby making the positive wire going out from the push button switch on the female plug.

For testing, you can plug the cigarette lighter end into the jumper pack. Then connect the alligator clipped wires so the clips are shorted. Plug it all together and turn on the keyed switch. DO NOT push the push button switch as bad things will happen. If the LED lights up when the key is turned on, it is wired correctly so turn off and remove the key and unplug the controller. If the LED doesn't light up switch the two wires on the LED and test

again. (This happened to me). Once the LED lights up as designed, you can solder all the connections inside the launch box.

Screw the lid on the weather proof electrical box and plug everything back in to verify that the LED still lights. All that's left is to wind up the 50 foot extension cord on the reel and take it to a launch!

I have found that this set up works just fine for flying composite Aerotech motors with copperhead igniters with no misfires (out of 8 launches) so far. I haven't flown any single or cluster black powder motors with it yet, but I'm betting it has enough power to do that as well. What's nice about it is the "feel" that the keyed switch has because it was designed for off road use. Time will tell how rugged it actually is. I intentionally tried to make this launcher so that it can be set on the ground between launches and doesn't have to set on a table. The only improvement I would make to this setup after these few launches would be to have the wires come out of the "top" of the box instead of the "bottom" as you hold it for launching. You might want to consider that modification if you decide to build one of these.



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ASPLAC Continued



Ignitor Clip Cable



Jumper Pack Cable



Jumper Pack



50 Foot Spool



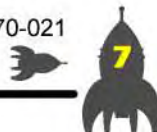
An additional benefit for this launcher is that it can be carried out to the middle of a field in one trip, including the jumper pack because it all fits inside a plastic toolbox. Also, I no longer need a large messy automotive or marine style battery for power requirements. Because it can be recharged in the car and at home, I can use the battery pack for camping excursions I take throughout the summer to light up a lantern at camp –way cool.

Parts List (From Menards):

- (1) Weather proof plastic electrical box
- (1) 3/4 inch water tight connector #18821
- (2) 10 feet orange outside extension cords
- (1) 50 feet orange outside extension cord
- (1) Bayco Kord Manager 100 foot cord storage reel
- (1) Calterm Battery Cut Off #41860 (keyed switch)
- (1) Calterm Push Button Switch #40184
- (1) Peak Compact Battery Jump-Starters #PKC0BF
- (1) package of alligator clips

Parts List (From Radio Shack):

- (1) Orange LED Assembly #276-272
- (1) Auto Cigarette Lighter replacement power cord #270-021



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MASA Directory

Minnesota Amateur Spacemodeler Association
NAR Section 576

Established January 1998

Founding President: Russ Durkee

Club Website

www.masa-rocketry.org

President and Webmaster

Alan Estenson - estenson@mn-rocketry.net

Vice President

Carol Marple - cjmarple@peoplepc.com

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Contributors to this issue:

- Alan Estenson
- Carol Marple
- Art Gibbens
- Jeff Taylor
- Ken Jarosch
- Rick Vatsaas
- Ray King

Thank You

MASA Welcomes the Following New Members:

➤ **Michael Crotteau**

➤ **Dean Johnson**

Welcome back, Dean (Returning from 2001)

➤ **Todd Schweim**



© Jeff Taylor

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Hope Christian Academy TARC Team Update

by Art Gibbens

"It was the best of times, it was the worst of times..."

Actually, not too much worst of times - as far as we can tell the landing did them in. They had not broken an egg all year during testing so they were as surprised as anyone when the top egg was cracked on its bottom. The ground at the launch site was very soft and squishy, as they had had rain all week leading up to the launch. What happened to the HCA team was unusual but not out of the ordinary. Their rocket came down under one parachute with the bottom section hanging well below the payload section. As the rocket was descending it had a small/slow rotation which is perfectly normal. What was abnormal is that the rotation and angle were such that the tip of the nose cone "stuck" the landing. Our best theory is that the

sudden stop caused the bottom egg to slide forward into the bottom of the top egg cracking it. The other less likely possibility is that as the rocket accelerated off the pad the top egg slid down onto the bottom egg. Even if they had not cracked an egg, their score would have been around 90, placing them about 66th or 67th. They only got an altitude of 666 feet with 48+ seconds.

The students had fun mingling with other students from around the country and learned many new ideas to try to incorporate into next year's design. They saw that the top teams all used two parachutes and lighter rockets, so that's what they talked about for much of the trip home.

The team ended up with one engine left over because we didn't get into the final round, so they decided to go to the MASA launch in May to burn it up. They decided to take out all the extra weight so they can see how high it will go. The team also flew several low power rockets at the MASA launch.

Art Gibbens

"The measure of a man's character is what he would do if he knew he would never be found out."

~ Thomas Macaulay



Official HCA team photo from the finals



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Stainless Steel Blast Deflectors by Alan Estenson NAR 69539

When I built my 6-pad launch controller and 4-place sawhorse pad last year, I ran short on time and ended up buying Estes blast deflectors to use on it. They worked well enough, but one season's heavy use at MASA launches essentially obliterated the plastic standoff/rod mount in the center.

With prime launch season fast approaching, I wanted something much more durable. Turning to McMaster-Carr (www.mcmaster.com), I found what I needed:

- #1316T25 – 12"x12"x0.060" type 410 stainless steel sheet, \$13.92
- #92373A463 – 18-8 stainless steel slotted spring pin, 5/16" x 1.5", \$9.75 (pack of 25)
- #92373A611 – 18-8 stainless steel slotted spring pin, 7/16" x 3", \$7.00 (pack of 5)

I went with all stainless steel parts for durability and corrosion resistance.

To fabricate the deflectors, I cut each sheet into four 6"x6" pieces using an industrial band saw. The edges were

deburred and corners knocked-off using a belt sander and bench grinder. To fit over launch rods up to 3/16", I drilled 5/16" holes in the center of most deflectors to fit the smaller spring pins. For launch rods up to 1/4", I used the larger 7/16" pins in the rest of the deflectors. The spring pin should be a nice, snug fit in the hole. If it isn't, you'll need to expand the pin out a little using a chisel. By positioning the plate over a larger hole drilled in a block of wood, you can pound in the pins with a hammer. Using spring pins isn't a new idea; it's what Estes used to do – way "back in the day".

Sources other than McMaster-Carr:

Any hardware store will have spring pins (also called roll pins). (Although, they may not have them in stainless steel.) For stainless steel sheet, stop by Discount Steel in Minneapolis.



Celebrate MASA's 10 Year Anniversary at the Summer Picnic

This Year's Summer Picnic celebrates MASA's 10th anniversary. Bring your family and guests, and make a day of it. Check the web site for volunteers needed.

Saturday, July 19, 2008

Rocket Launching: 2 pm - 5 pm

Eating & Socializing: 5 pm - 8 pm

Elk River & Rogers VFW Post, Otsego

More details on the MASA Website

RSVP at masa@mn-rocketry.net

- Golden Scout Flights
- Kitbash Contest
- Door Prizes
- Fun
- Food
- Swap-n-Sell



MASA Planet

MASA Donates Rockets to NARAM 50

by Carol Marple

NARAM 50 is hosting a Fly-It/Take-It event on July 26 and 27. This event allows youngsters as well as first-time flyers of any age to pick out a rocket, fly it at NARAM 50, and then take it home with them. NARAM 50 organizers asked NAR Sections around the country to build and donate rockets for this event.

The picture on the right shows the rockets that were donated by various MASA members. After they were collected, I supplied a note about each one to let the new owner know the specifics about his or her new rocket (name, manufacturer, recommended engines, donor's name, etc).

In all, MASA donated 10 rockets for this event. From left to right: Estes Alpha (Andy Heren), two Semroc Boids (Alan Estenson), Semroc Squire (Jeff Taylor), Estes Alpha, Quest Aries and Estes Alpha (Andy), Estes Patriot and Semroc Rawhide (Carol Marple) and Estes Patriot (Jeff).

Thank you to all who donated rockets!!



ADDRESS SERVICE REQUESTED

MASA Planet
c/o Jeff Taylor
9240 University Ave NW #209
Coon Rapids, MN 55448

Place
Postage
Here

MASA Planet