



**VICTOR'S R2D2 BUILDING DIARY**  
**APRIL 2005 – MAY 2007**



## PREFACE

During the first weekend of April, 2005, Target, Toys-R-Us and Wal-Mart each ran promotions for the final Star Wars movie, Star Wars Episode III: Revenge of the Sith. I went to Wal-Mart in Anaheim Plaza around 5:00pm on Saturday, April 2, 2005, but the Star Wars promotional tent had closed for the day, so I was out of luck.

The next day I returned, this time around 11:30am. I parked my car and headed for the Star Wars tent. As I arrived, I saw Stormtroopers, Boba Fett, a car made up to look like an X-Wing, and... R2-D2.

R2-D2 had always been my favorite character from any movie. I have collected all sorts of R2 toys and action figures, so to see him moving around right in front of me was quite something. I ran back to my car to get my digital camera from my glove compartment. When I returned I snapped many pictures of R2-D2 as he interacted with the crowd.

R2 headed off into the store, while I went about my original mission, to purchase the Wal-Mart collectible. After that was done, I went into the store, in search of R2 again. He wasn't hard to find, there was a large crowd of kids swarming him. I resumed taking pictures; it was a bunch of kids and me, gawking over R2. I took so many pictures, the camera batteries ran down, and I had to go up to the register and buy some more.

For the life of me, I couldn't figure out who, if anyone, was controlling R2. I saw a man that was helping to organize photos, and I asked if he was the one in charge of R2, but he said no. Moments later, I felt a tap on my shoulder, and an unassuming guy said quietly, "It's me."

Mike Senna showed me the remote control in his bag, and I proceeded to bombard him with questions, as he controlled R2 while answering everything I asked. How did you build him? Can you build one for sale? How much does he weigh? How much did he cost to make? And on and on.

Mike kindly suggested that I join the R2 Builders group on Yahoo, which I did the very same day (the next day I received my Welcome letter). It wasn't long before I was hooked, and I embarked upon an extremely challenging and rewarding project, to make my own R2-D2.

I started this diary mainly as a way to keep track of the build, but soon I found that many others were following my progress, and even using it as a guide of sorts, which pleased me since I felt it was a way of giving back to the group. I hope this is helpful to others that embark upon their own builds. As they say, there's no one right way to go about this task, but this weblog does show you one particular way in a fair amount of detail.

Thank you to Mike and the group for helping make this project a reality.

Victor Franco  
October 11, 2007

SUNDAY, APRIL 03, 2005

## How it Started

This started it all. Went down to Walmart in Anaheim for the 48 Hours of Star Wars promotional event (launch of Episode III toys). R2 was there, looking every bit perfect. After I took a few dozen pictures, R2's builder and owner, Mike Senna, introduced himself and we chatted for a good 45 minutes to an hour about R2's construction and operation. Mike suggested I join the R2 Builders group on Yahoo, and I did. And here we are.



*posted by Victor Franco at 9:12 PM* 0 COMMENTS

MONDAY, APRIL 04, 2005

## Joined R2 Builders Group on Yahoo

Date: 4 Apr 2005 22:04:02 -0000

From: "Yahoo! Groups Notification"

To: victorfranco2003 [at] yahoo.com

Subject: Request to join r2builders approved

Hello,



The moderator of the r2builders group has approved your request for membership.

*posted by Victor Franco at 9:11 PM* 0 COMMENTS

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THURSDAY, APRIL 21, 2005

## Terms & Acronyms Doc

Created a Terms and Acronyms file so I can keep track of terms like "Rockler Bearing," "R&J Dome," etc.

*posted by Victor Franco at 9:11 PM* 2 COMMENTS

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### "Terms & Acronyms Doc"

#### 2 Comments - [Show Original Post](#) Collapse comments

Anonymous said...

uh.. Terms and Acronyms doc? Could you post that? Im kinda new and have been looking for such a thing.

hforbess AT Gmail Dot Com

3:47 PM

Victor Franco said...

Hi Harry,

I just e-mailed the document to you. If anyone else wants it, just post a comment here and I should be notified by e-mail (as of this writing, 5/10/06 at least, who knows what will change in the years ahead?).

It's a funny thing, being in the R2 Builder's Club. After a few months, you start to learn all these terms and stop writing them down(!). So my list kind of fizzled out after a while, but let me know if there are some terms that are still unfamiliar.

Good luck,  
Victor Franco  
7:06 PM

FRIDAY, MAY 06, 2005

## Talked to Mike

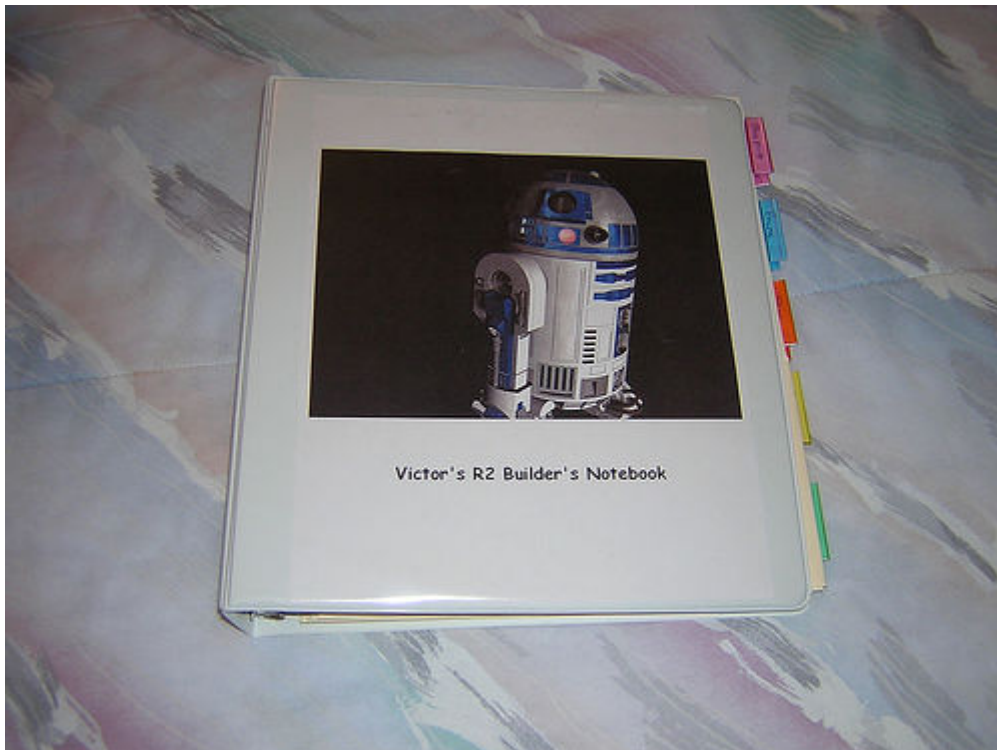
Spoke with Mike Senna by phone for about 45 minutes. Equipped with a somewhat nascent R2-building vocabulary, I was able to ask Mike about the details of his R2 construction and other R2 building issues (e.g. tools, sources).  
*posted by Victor Franco at 9:10 PM* 0 COMMENTS

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SUNDAY, MAY 08, 2005

## Skins, Dome Ordered, Notebook

Started "Victor's R2 Builder's Notebook"  
Ordered John Sherrell's aluminum skins and the R&J dome today via PayPal.



*posted by Victor Franco at 9:07 PM* 0 COMMENTS

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MONDAY, MAY 09, 2005



## First Post to R2 Builder's Group

First post to R2 Builders Group on Yahoo. Post #83209, helped out with R2 notes in picture in Vanity Fair from 2002. Posting looked all malformed due to poor line breaking, probably due to browser issues on my Mac.

*posted by Victor Franco at 9:07 PM* [0 COMMENTS](#)

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WEDNESDAY, MAY 11, 2005

## Skins Arrive

Aluminum skins by John Sherrell arrived. At least one of the punch-outs from the inner skin (just above the power coupling) is missing, not sure if that will be a problem or not. [Later learned that's okay.] The punch-out to the right of that one was punched-out, but in the box.

Ordered CII and R2LA I DVDs from Mike McMaster.

(Also ordered Mac OS X 10.4 Tiger from Amazon today, credit card starting to take a bruising.)



*posted by Victor Franco at 9:06 PM* [0 COMMENTS](#)

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SUNDAY, MAY 15, 2005

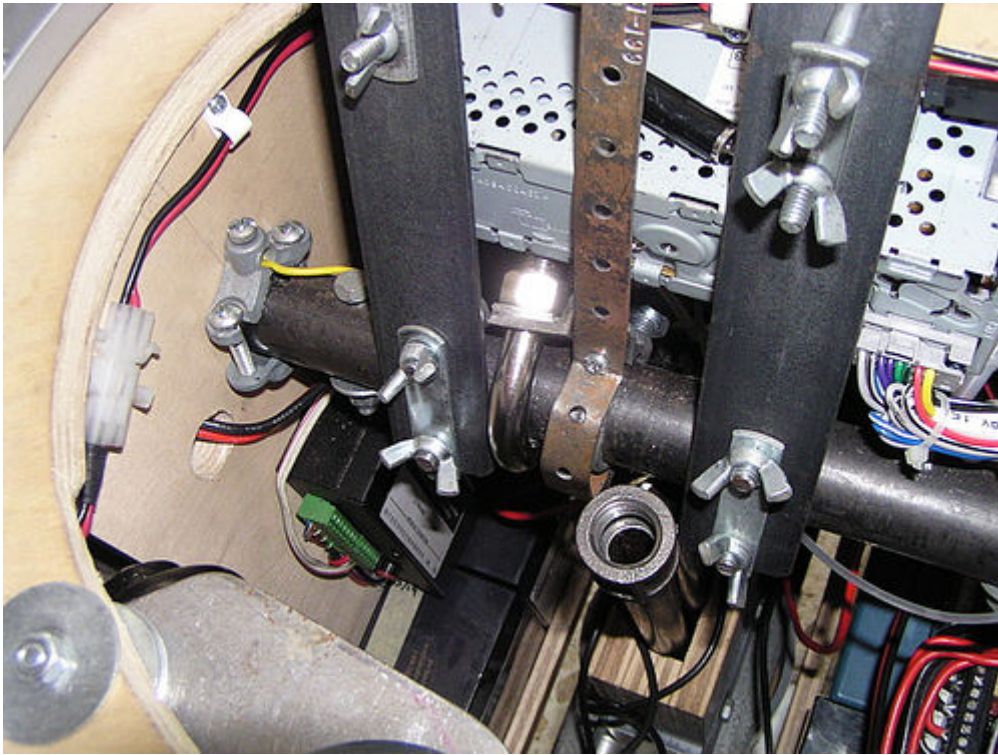
## Meet with Mike

Met with Mike Senna from 1:00pm - 3:40pm. Mike showed me some of the DVD material for leg-building.

Took lots of notes and pictures. These pictures are NOT OF MY R2 (still to be built), they are of Mike's.







We covered a lot of ground beyond what my questions covered. It's pretty evident that building R2 take a lot of forethought and innovating thinking.

*posted by Victor Franco at 9:04 PM* [0 COMMENTS](#)

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TUESDAY, MAY 17, 2005

**DVDs Arrive**

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Celebration II and R2LA I DVDs that I ordered from Michael McMaster arrive.



*posted by Victor Franco at 9:03 PM* [0 COMMENTS](#)

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SATURDAY, MAY 21, 2005

## Meet with Kelvin

Met with Kelvin to go over tools and stuff. Showed Kelvin the Frame Building Tutorial. He said I could borrow his power tools.

*posted by Victor Franco at 9:03 PM* [0 COMMENTS](#)

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THURSDAY, MAY 26, 2005

## Rockler Bearing

Called Rocker store on Tustin Ave. in Orange to see if they have the lazy susan bearing in stock. They said they had one left, so I picked it up. \$65.72 out the door.



Artoo's neck:



*posted by Victor Franco at 9:02 PM* 0 COMMENTS

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SUNDAY, MAY 29, 2005

## Book Ordered, Supplies Purchased

Ordered Robot Builder's Bonanza from Amazon today.

[Robot Builder's Bonanza](#)

Went to Home Depot to check out 4'x8' birch, and ask if it could be cut in 4' x 4' sheets. Couldn't tell if their plywood was birch. They can cut it down, but their saw was out of order for a few days.

Purchased Carpenter's Square, 4 packages of JB Weld, goggles/masks, ear protection muffs, Crazy Glue, Elmer's Interior/Exterior wood glue. Total: \$56.62.

*posted by Victor Franco at 9:01 PM* 0 COMMENTS

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MONDAY, MAY 30, 2005

## Purchased Lumber for Frame

Went to Lowe's with my dad in his Ford Escape. Purchased lumber for frame:

1 piece 4'x8'x3/4" birch plywood, cut in half into two 4'x4'x3/4"

1 piece 4'x8'x1/2" birch plywood, cut in half into two 4'x4'x1/2"

Total for R2 lumber: \$68.88



*posted by Victor Franco at 9:00 PM* 0 COMMENTS

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FRIDAY, JUNE 03, 2005

## Book Arrives, Blog Started

Robot Builder's Bonanza arrived today.

Started artoodetoo blog on Earthlink (later moved to blogger/blogspot).

*posted by Victor Franco at 8:59 PM* 0 COMMENTS

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TUESDAY, JUNE 07, 2005

## Blueprints Printed

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Went to Reprodox in Orange (California) to get blueprints printed. Unfortunately, each sheet was to be about \$20.00, and I had intended to print 30 sheets. Not wanting to spend \$600.00, I pared down the order to four sheets (body flat, body rolled, shoulders & ankles). Turned out the blueprints for the body were too large to print on one sheet, so I just opted for the shoulders & ankles. \$44.00.



*posted by Victor Franco at 8:58 PM* 0 COMMENTS

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WEDNESDAY, JUNE 08, 2005

## Holoprojectors Ordered

I ordered a set of 3 aluminum Holoprojectors from Scott today. \$255.00 for the trio. See [Holoprojectors](#) for a look

*posted by Victor Franco at 8:57 PM* 0 COMMENTS

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SATURDAY, JUNE 11, 2005

## Power Tools Borrowed

Borrowed a ton of power tools from my dad and Kelvin today, including saws galore (circular saw, jig saw, chop saw, table saw), drills, Dremel tool, sanders, router, clamps, vices, B&D Workmate 550, and a whole bunch of odds & ends. Worked on building a plant stand (replica of one I built 25 years ago in 8th grade woodshop). Got 4 legs and 2 lap joints done. No injuries.







*posted by Victor Franco at 8:56 PM* 0 COMMENTS

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FRIDAY, JUNE 17, 2005

## **Purchased Shoulder Hydraulics & Buttons**

Submitted Paypal purchase for shoulder hydraulics and buttons (\$102.85 total).  
See:

[Shoulder Hydraulics & Buttons](#)

Hi to Rich and Paul, the only two people on Earth who find this interesting. :)

*posted by Victor Franco at 8:55 PM* 0 COMMENTS

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SUNDAY, JUNE 19, 2005

## **Drilled Plant Stand Legs**

(This has nothing to do with R2 building.) Continued working on building plant stand. Drilled 8 leg holes for plant stand (1/8" + 1/2" countersink), 8 holes in lap joints. Didn't get started until late, so not much time to do much else (Father's Day get-together)

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*posted by Victor Franco at 8:53 PM* 0 COMMENTS

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TUESDAY, JUNE 21, 2005

## Moving Day

Moved the R2 Building Diary over to Blogger, since Earthlink's Trelix software is lamentable.

*posted by Victor Franco at 11:08 PM* 0 COMMENTS

## Picked up Circle Cutter for Router

Picked up [Router Circle Cutter](#) at Rockler

Also picked up some shellac for plant stand (still need to sand the wood & glue the lap joints).

Also pinged Azman regarding the lens for R2's radar eye, he says maybe another week. Offered to e-mail when they arrive, I took him up on that.

*posted by Victor Franco at 7:00 PM* 0 COMMENTS

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WEDNESDAY, JUNE 22, 2005

## Sanded Plant Stand Legs

Got home with enough daylight left to use Kelvin's belt sander (and Workmate, and clamps...) to sand down the plant stand legs.



*posted by Victor Franco at 9:32 PM* 0 COMMENTS

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SATURDAY, JUNE 25, 2005

## **Routed Plant Stand Legs, Shellaced**

In more preparation for R2 building, did a memory refresh of how to use a router. Note the wood debris a-flyin' toward the lower left.



Also started shellacing them.





I know, I know.... when will he get to R2???

*posted by Victor Franco at 4:56 PM* 0 COMMENTS

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MONDAY, JUNE 27, 2005

## Plant Stand Legs Attached

Put together the plant stand legs and the lap joints. Came together about how I expected, meaning less than perfect, but not a total disaster either. Plugs to cover the screw holes didn't always sit flush. Oh well...





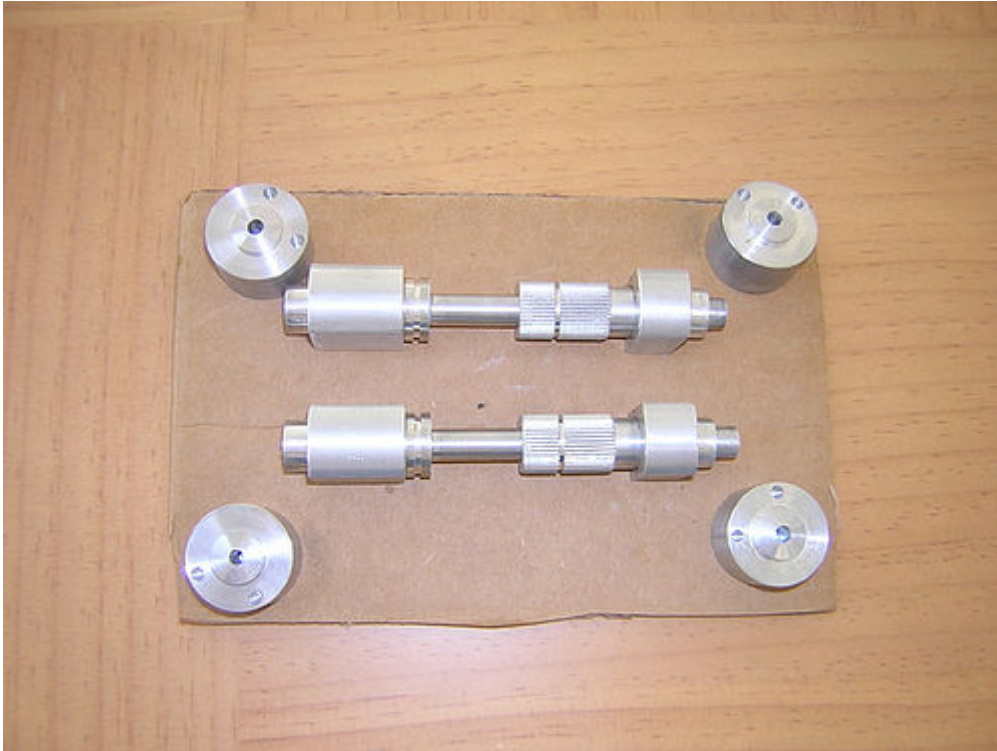
*posted by Victor Franco at 7:28 PM* 0 COMMENTS

## Shoulder Hydraulics & Buttons Arrive

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Cool! Ryan's shoulder hydraulics and buttons arrived today.



*posted by Victor Franco at 5:45 PM* 0 COMMENTS

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TUESDAY, JUNE 28, 2005

## **Purchased C3 R2 Builders T-Shirts**

Bought a couple of Celebration 3 R2 Builders' T-Shirts. See:

### **C3 T-Shirts**

*posted by Victor Franco at 10:33 AM* 0 COMMENTS

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WEDNESDAY, JUNE 29, 2005

## **Ordered Ankle Cylinders & Wedges, Battery Harnesses, Knurled Cable Fittings**

Several feet decorations ordered today. Ankle cylinders/wedges (resin, \$45.00), battery harnesses (resin, \$25.00) and knurled cable fittings (aluminum, \$50.00).

*posted by Victor Franco at 8:48 PM* 0 COMMENTS

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SATURDAY, JULY 02, 2005

## Cut Out Plant Stand Top

Used the circle cutter router attachment I bought (see entry for Tuesday, June 21, 2005) to cut out top of plant stand (where plant will sit). Routed decorative trim as well, drilled center hole for mounting. Need to shellac, mount and plug, and the plant stand will be done. (Like anyone cares about the plant stand...)

*posted by Victor Franco at 9:15 PM* 0 COMMENTS

## STARTED R2 CONSTRUCTION TODAY

Yes, I've finally started on buiding my R2. It doesn't get any more modest than today. With Kelvin's help, I cut R2's first wooden vertical rib (1"x1/2"x18 5/8"). We cut 12 of these total. Only 10 are needed, and of those, only 5 span the entire height of the skins. Still need to do dado cuts on the vertical ribs, but that will come later. Construction has started!

First piece cut:



Here's the group of them:



*posted by Victor Franco at 9:10 PM* 0 COMMENTS

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SUNDAY, JULY 03, 2005

## **Finished Plant Stand**

You'll be happy to hear that I'm done with the plant stand. Not because anyone cares about the plant stand, but because from now on, my posts should only relate to R2 building(!).

For better or worse, here's how it turned out:



*posted by Victor Franco at 8:49 PM* [0 COMMENTS](#)

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FRIDAY, JULY 08, 2005

## Practice Cut of Base, Ordered Radar Eye Lens

Did a dry run of cutting out the ~18" diameter base circle for the R2 frame, and the skins seemed to align within a millimeter or so, so I'm ready to do the real cut tomorrow. Also ordered the black radar eye from Azman today (\$15.00).

*posted by Victor Franco at 9:40 PM* [0 COMMENTS](#)

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SATURDAY, JULY 09, 2005

## Cut Out Bases (Top and Bottom)

Big day today. Cut out the bottom and top bases for the wooden R2 frame, plus a circle from which I will make horizontal ribs. All of the information I gathered for

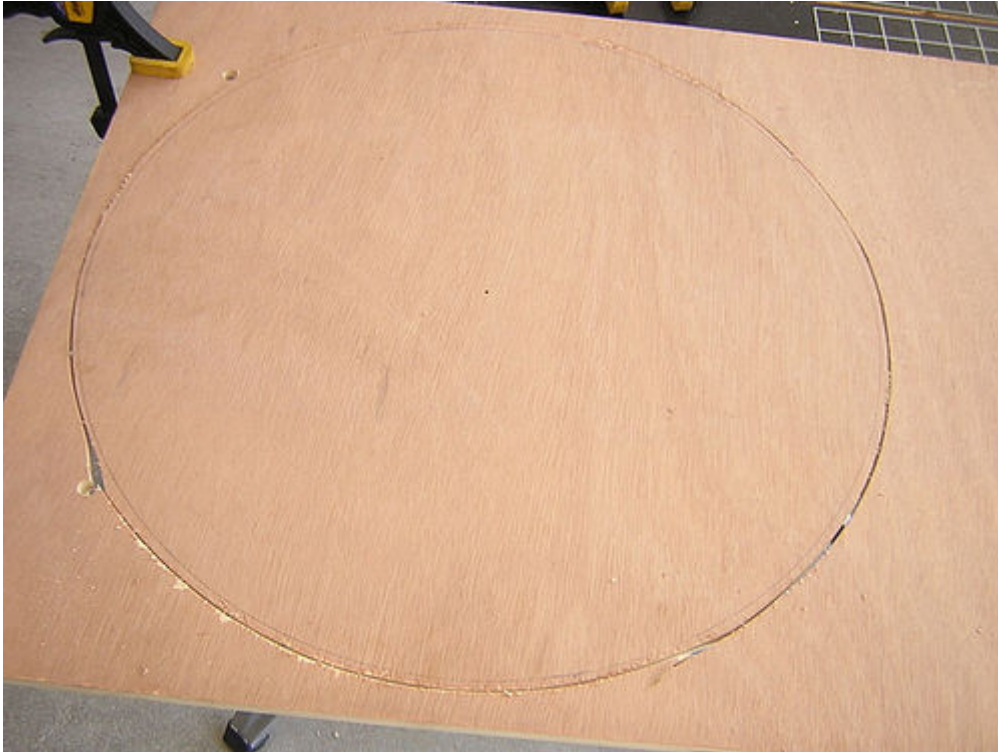
this comes from Mike Senna's wooden frame tutorial on the Celebration II DVD from the R2 Builders Club, and from the companion tutorial found at [Wooden Frame Tutorial](#)

First, I needed to cut a 4'x4'x3/4" section in half with the circular saw:



Next, I made a rough cut of the bottom base circle with a jigsaw, following a path just outside the penciled line that is 18" in diameter:





After that, I routed down the base circle using my circle cutter router attachment to bring the diameter down the exact diameter of the aluminum skins.



I did a test fitting of the skins to make sure the base circle was of the correct

diameter. It was.



Next I worked on routing out the grooves for the vertical ribs. The location of the vertical ribs was determined by matching them up to the areas on the inside of the aluminum skins to see where a vertical could go. Only five of the ten vertical ribs go all the way from the bottom base to the top base.







Then, I placed the ribs into the base for a test fitting. Pictures are of front and back. This took all day, my back is killing me.







*posted by Victor Franco at 9:40 PM* 3 COMMENTS

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SUNDAY, JULY 10, 2005

### **Remade Top Base, Rough Assembly**

I realized that yesterday I accidentally routed the wrong side of the top base (um, the slots need to face down, not up), so I re-cut and re-routed the top base correctly. I couldn't resist stacking up the bases on the five verticals that go from top to bottom:



And why not wrap the skins around and put the Rockler bearing on top while I'm at it?



*posted by Victor Franco at 11:07 PM* 0 COMMENTS

## **Radar Eye Lens Arrives**

Another part arrives: Azman's black radar eye lens. Now Artoo can see (if only he had a head).



*posted by Victor Franco at 6:53 PM* 0 COMMENTS

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MONDAY, JULY 11, 2005

## **Meet with Mike Again**

Learning at the feet of the master once more, Mike was kind enough to invite me to tape a portion of the leg assembly that is not available on the existing tutorial. Explained in detail how the brackets are attached to the leg and bolted down.





Timing was also perfect as Mike's wooden frame was out and I was able to get all my remaining frame questions answered.



*posted by Victor Franco at 11:00 PM* [0 COMMENTS](#)

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WEDNESDAY, JULY 13, 2005

## Marked Up Base Circles

Not much work today, just marked up the top and bottom base circles for routing out the slots for the planks, and the donut hole out of the top circle, and the rectangle for the middle leg out of the bottom circle. Also drew the lines for the small portions of the bottom of the circle that get chopped off on the left and right for the skirt.

Also picked up a compass (you know, for drawing circles) at Office Depot for \$4.30.

*posted by Victor Franco at 10:27 PM* [0 COMMENTS](#)

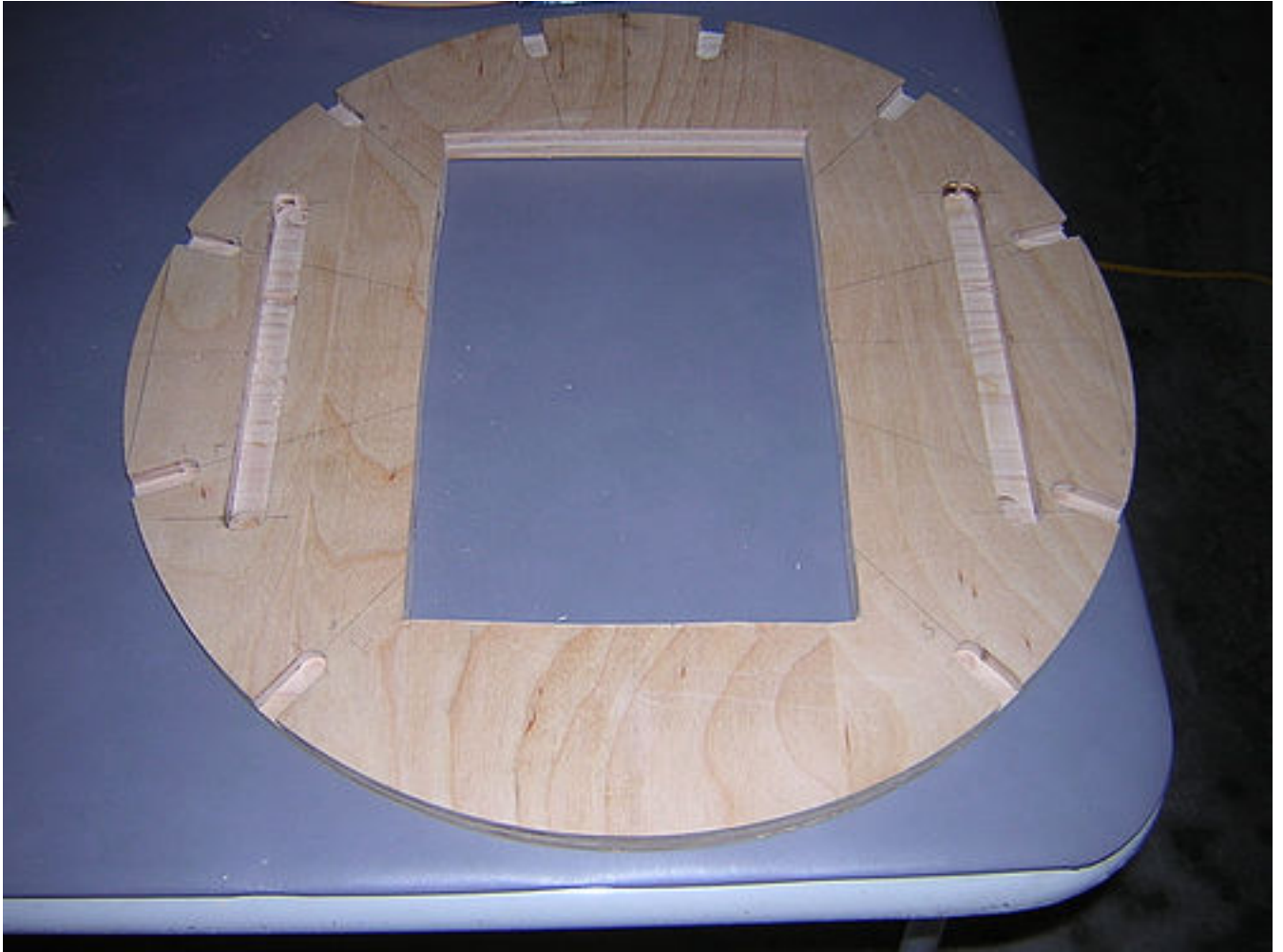
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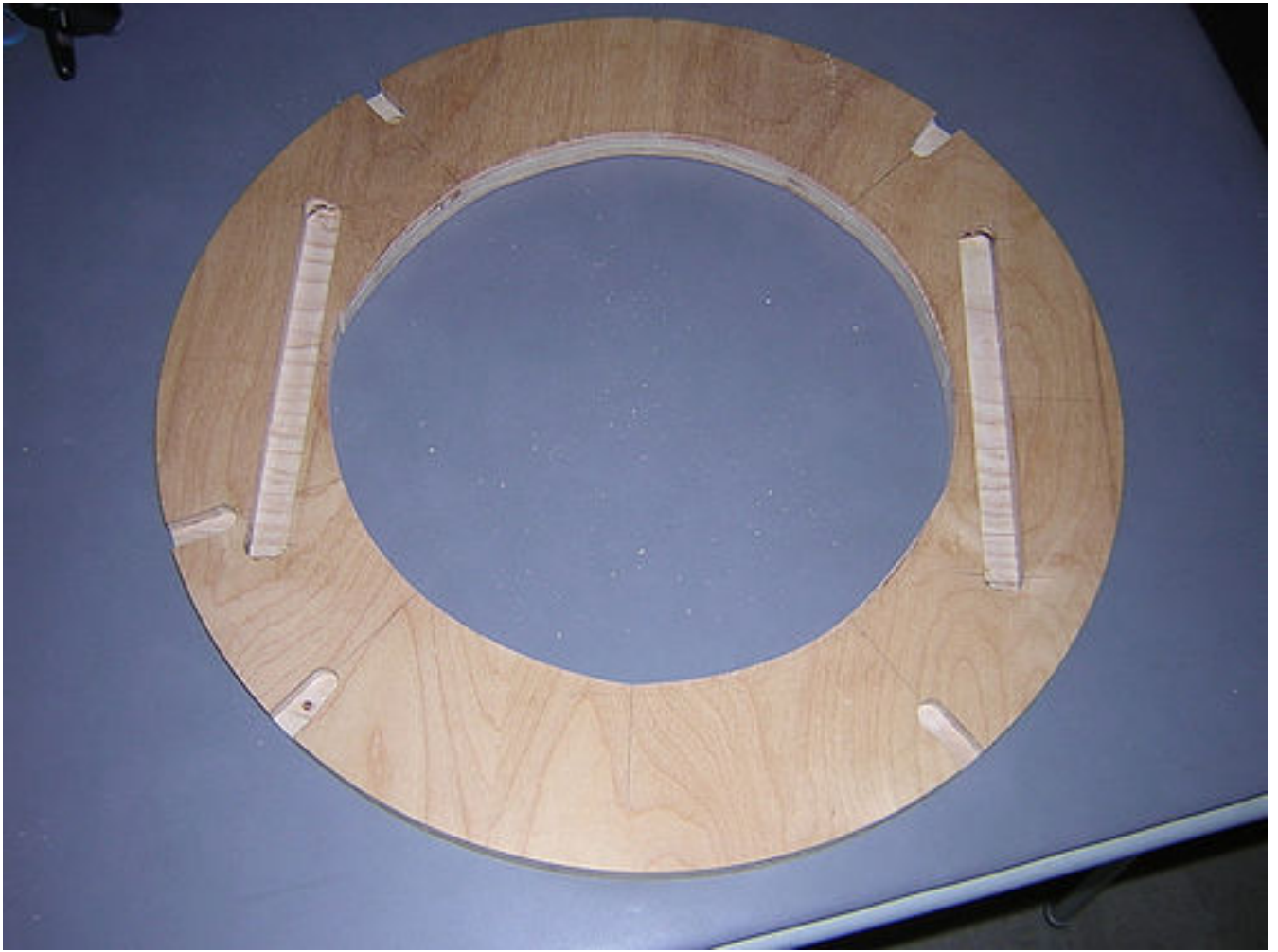
THURSDAY, JULY 14, 2005

## Cut and Routed Base Circles

Cut the rectangular hole for the middle leg out of the bottom base circle, and the round hole out of the top base circle for accessibility. Routed out grooves for shoulder planks in both top and bottom bases. Top base is done, bottom base only needs to have the left and right edges flattened on the table saw to fit the

skirt on correctly.









*posted by Victor Franco at 10:35 PM* 0 COMMENTS

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FRIDAY, JULY 15, 2005

## **Shoulder Planks & Skirt Lines Cut**

Cut out the planks that support the two bases, and that the pipe connecting the arm shoulders will run through. Also chopped out the 5" lines out of the left and right sides of the bottom base for where the skirt will attach one day.



*posted by Victor Franco at 10:27 PM* 0 COMMENTS

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SATURDAY, JULY 16, 2005

## Cut Horizontal Rib Rings, Pie Wedges & Marked Up Joints

I cut the 1"-wide rings for the horizontal ribs by cutting a normal circle like those that form the top and bottom bases, and then cut an inner circle using a jig saw. Two of these were cut to supply all the horizontal ribs. Also cut the pie wedges that will support the shoulder planks that I cut yesterday. Most of the tip of the pie wedges will be cut to fit against the planks.

Also marked up where the dado cuts will go for both the horizontal and vertical ribs:



Getting close!



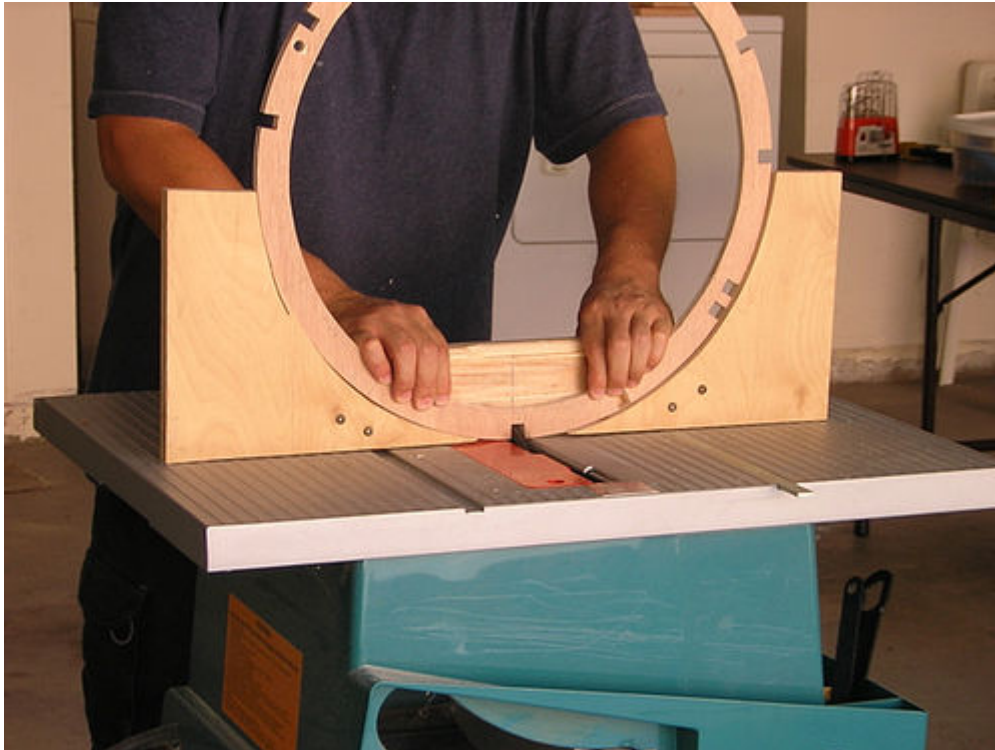
posted by Victor Franco at 9:06 PM 0 COMMENTS

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SUNDAY, JULY 17, 2005

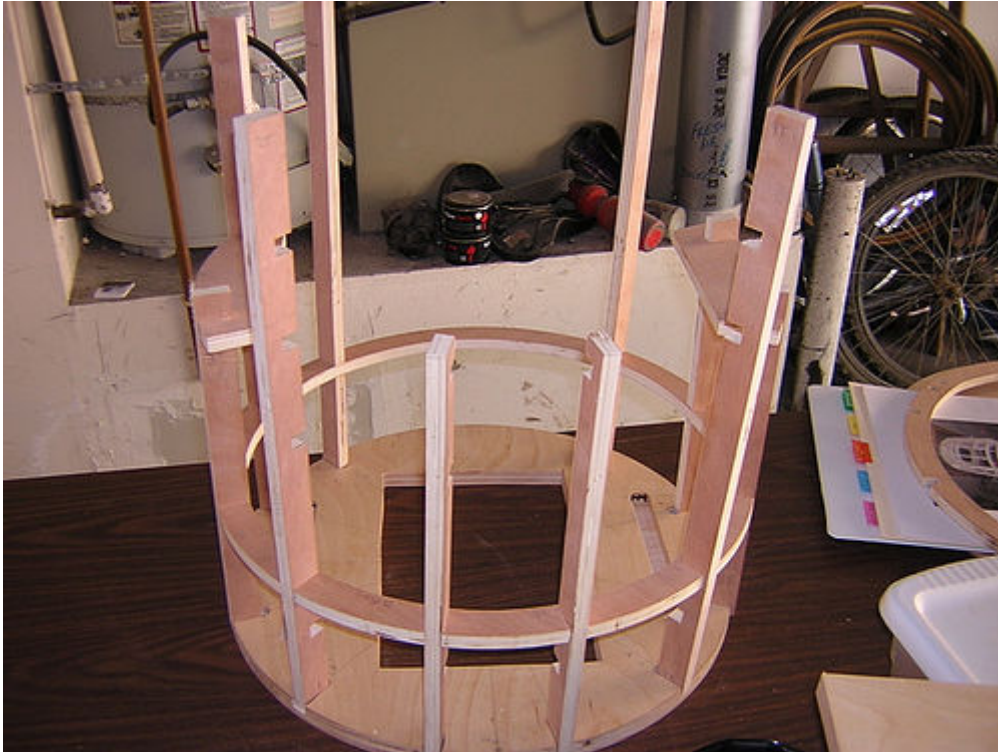
## Full Frame Assembly!

With big thanks to my buddy Kelvin, I was able to just about finish the wooden frame today. Began by making Mike S.'s sled to make dado cuts into the rings. The bulk of the rest of the day was spent making 1/2" deep dado cuts:



As the cuts were completed, I would do a test fitting. Note that the "B" ring is installed, but the back portion will be cut to allow back-panel access:





And here it is, the full assembly. The back skin is clumsily set behind it, so it's not aligned:



All that's left to do is cut the back of the B ring and trim some of the ribs to size. Then the frame will be DONE!

*posted by Victor Franco at 7:08 PM* 0 COMMENTS

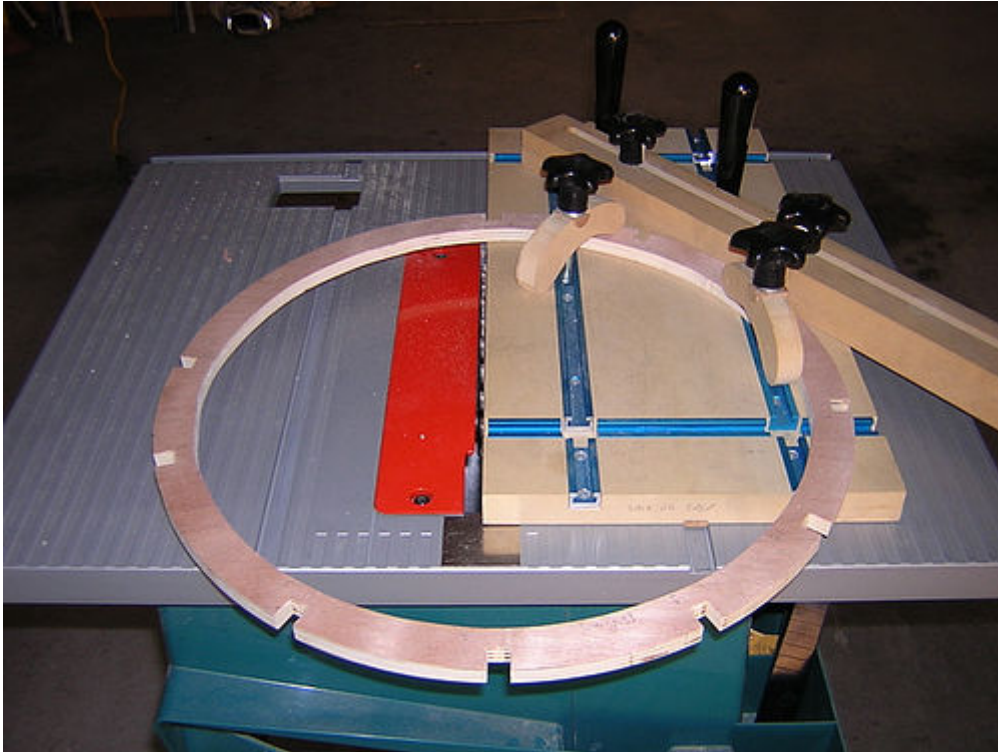
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MONDAY, JULY 18, 2005

## Frame Finished

I made the final cuts to the ribs to finish the frame.

I had to open up the B ring by cutting out the segment between ribs 5 and 6 for back-panel access.



An R2's-eye view.



*posted by Victor Franco at 9:02 PM* [0 COMMENTS](#)

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WEDNESDAY, JULY 20, 2005

## **Knurled Cable Fittings Arrive**

Michael Davis' knurled cable fittings arrived. Also picked up some brass hose at Lowe's for the feet (and a spray paint trigger attachment). \$41.31 for those.





*posted by Victor Franco at 3:15 PM* 0 COMMENTS

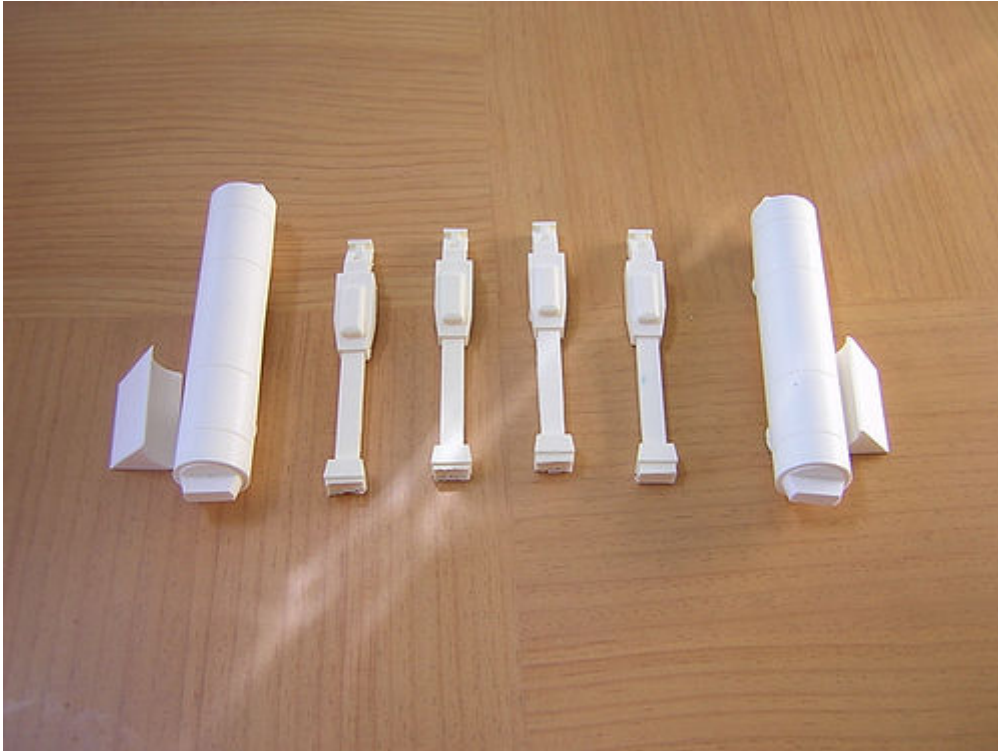
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THURSDAY, JULY 21, 2005

## Resin Ankle Details Arrive

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Cory's resin ankle cylinders, wedges and battery harnesses arrived today.



*posted by Victor Franco at 10:09 PM* [0 COMMENTS](#)

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FRIDAY, JULY 22, 2005

## **T-Shirts & Saturn Motors Arrive**

The Celebration III t-shirts and the six Saturn windshield wiper motors I ordered arrive (only need 3, but just in case...). The motors will be used to power R2's feet and dome rotation.



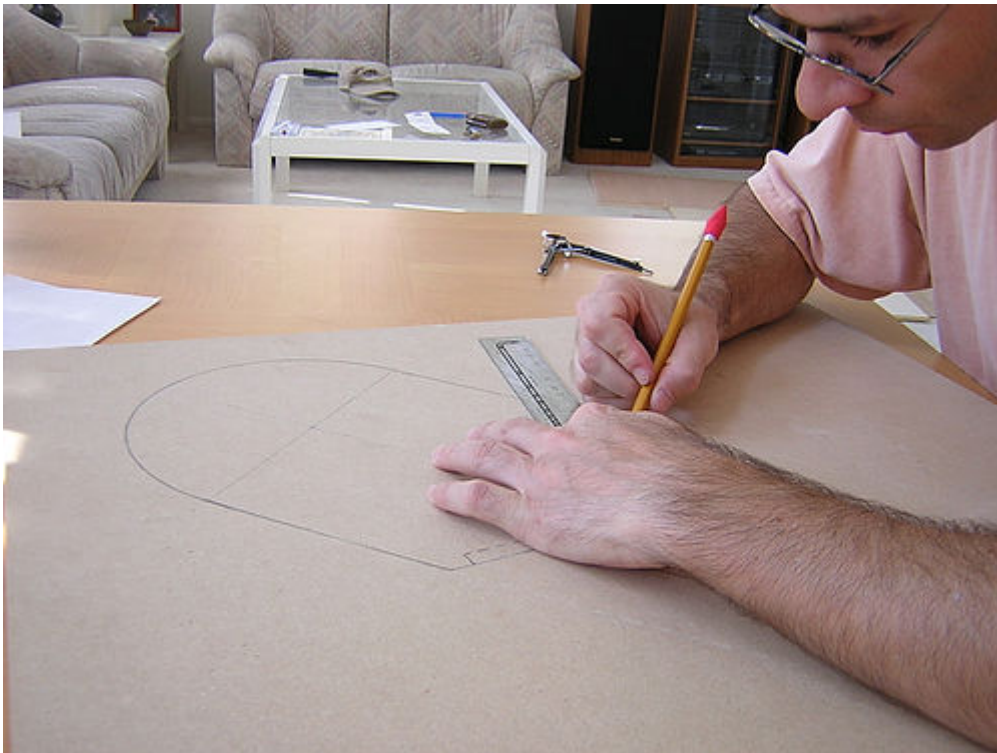
*posted by Victor Franco at 5:35 PM* 0 COMMENTS

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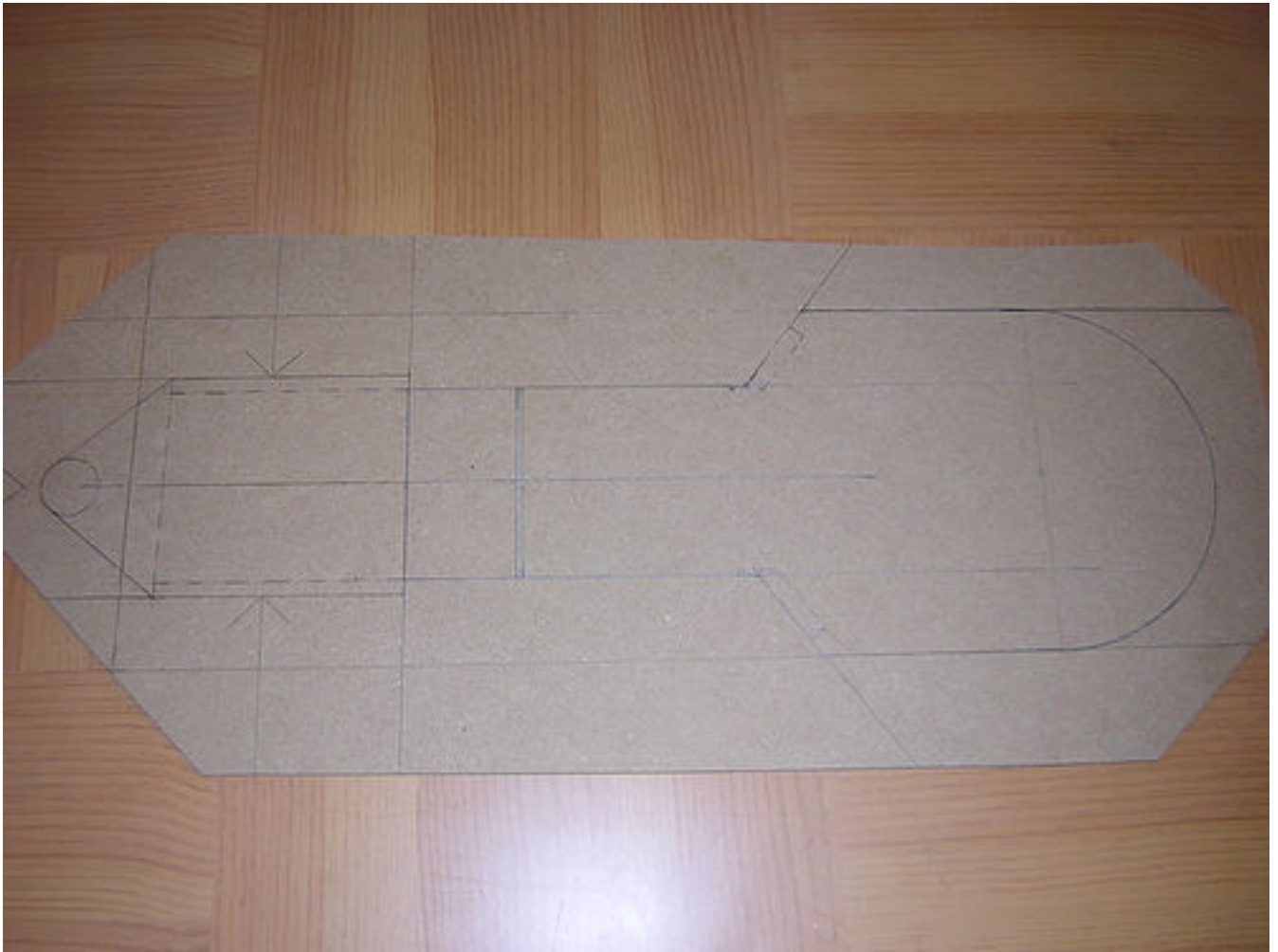
MONDAY, JULY 25, 2005

## Marked Up Leg Template & Rough Cut

Meticulously drew up the leg outline on 1/4" Medium Density Fiberboard (MDF) from full-sized blueprints. First I went back to Reprodox, where I originally got the leg blueprints printed, to have copies made of them so I could trace on them (\$14.00 for two sheets copied). Then I went to Jo-Ann's (for the first and last time in my life) to get some trace paper (used for sewing). Placed trace paper on MDF, and then the blueprint on top of that. With the blueprint copy being held down by thumbtacks, and using a straight-edge and compass as necessary, I traced with pencil over the blueprint copy. This resulted in an outline on the MDF. Went back over the outline on the MDF again with a pencil, straight-edge and compass, and solidified and extended the outline as needed. Finally did a rough-cut with a jig-saw in preparation for trimming down tomorrow.







*posted by Victor Franco at 10:10 PM* 0 COMMENTS

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TUESDAY, JULY 26, 2005

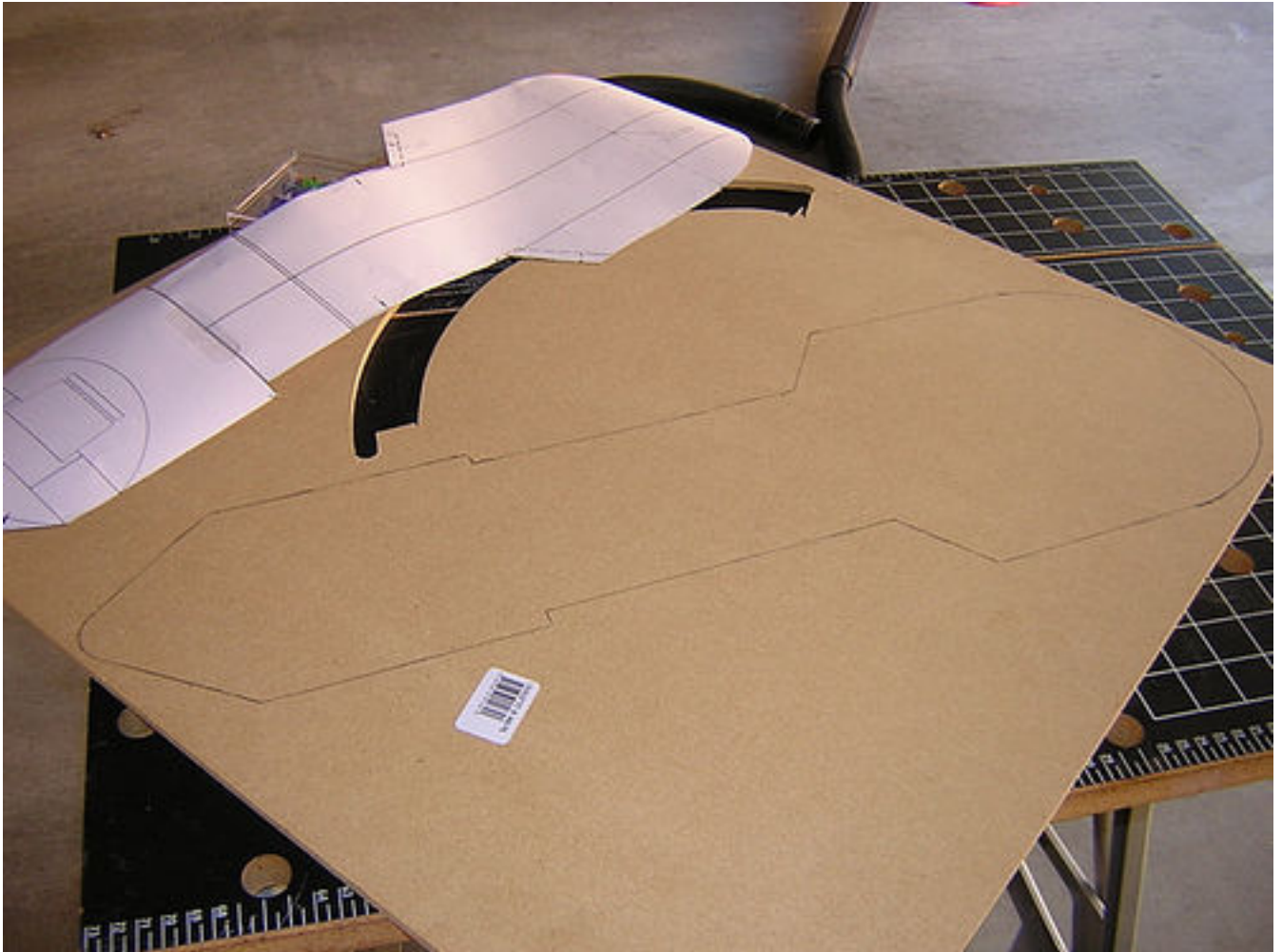
## Cut Leg Template (Twice)

This was kind of sad.

After spending so much time marking up the template yesterday for cutting today, it turns out that my markings were not 100% perfect. First I cut the template I marked up from yesterday:



I didn't really notice anything wrong with the template, so I decided to use it to cut a test leg piece from 1/2" plywood. Careful study showed some asymmetry. Since I need to use this template 10 times (5 for each leg), I decided to start over, by going straight to the blueprint. I cut out the outline of the leg from the blueprint using an Xacto knife and straightedge:



Ultimately I cut this template out too. Even this template is not 100% perfect, but it's a lot better. The only thing wrong with it is that the edges above where the ankle joins the leg are not of equal length. I haven't decided whether I will a) try to fix the template, b) live with it, or c) start over again for the third time.

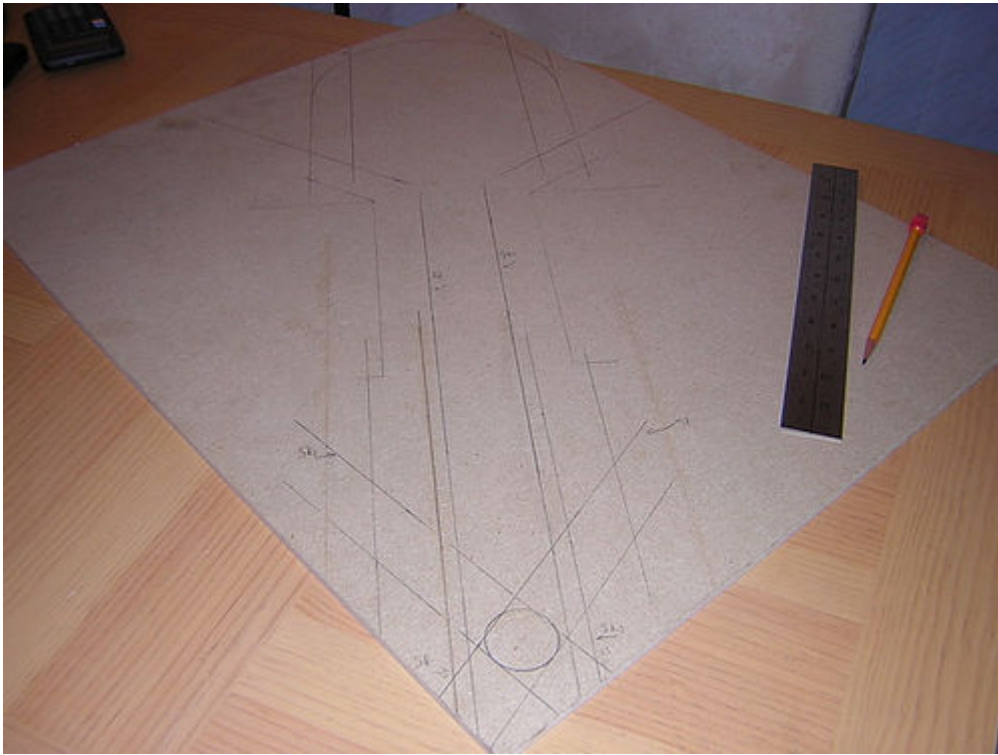
*posted by Victor Franco at 10:44 PM* 0 COMMENTS

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FRIDAY, JULY 29, 2005

## Marked Up 3rd Leg Template

This makes my third attempt at getting the leg template right. I marked up the outline of the leg, followed by marking up where the skis of the jig-saw should ride to make the perfect cut. I sure hope it works this time...



*posted by Victor Franco at 11:47 PM* 0 COMMENTS

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SATURDAY, JULY 30, 2005

## Cut Legs Out

Another very long day. I cut out my uber-leg-template. Too bad I accidentally destroyed it with the router. Actually, it wasn't too bad, but it was rendered unusable. All was not lost, however, as I was able to use that template to create a new one and work around the damaged part, so things turned out okay.

Cut out the legs based on these templates. Note that the small part sitting on top of each leg has not yet been routed, plus I still haven't done the 1/4" inch section that goes under all the layers, and some areas will be trimmed near the bottom:





And here's just part of the mess I made:



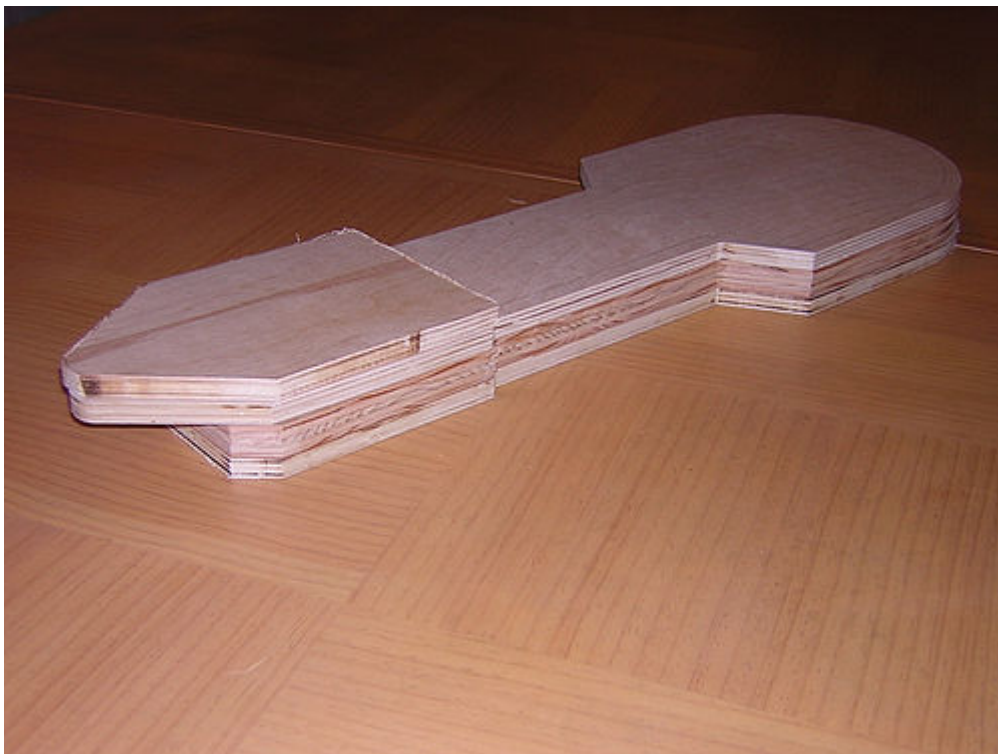
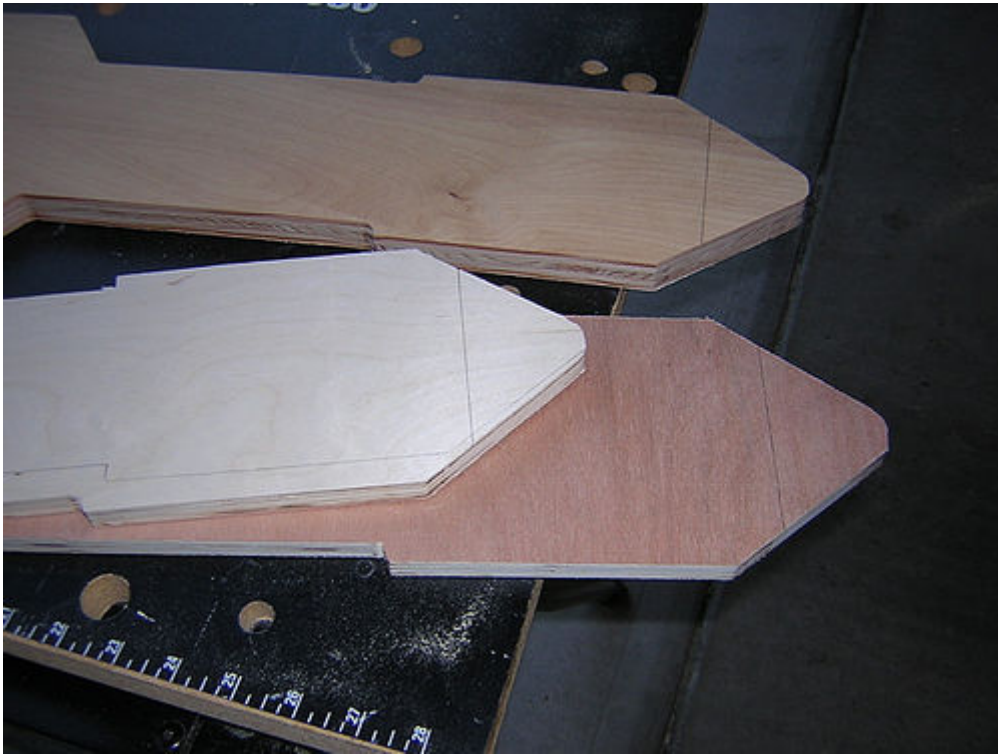
*posted by Victor Franco at 9:13 PM* 0 COMMENTS

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FRIDAY, AUGUST 05, 2005

### **More Leg Cuts**

Made a small template for those parts of the ankle section that need the tip chopped off. Cut four leg parts to size. Still much to do.



*posted by Victor Franco at 8:58 PM* 0 COMMENTS

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SATURDAY, AUGUST 06, 2005

## Finished Major Outer Leg Cuts

Well, I finally finished the major cuts of the outer legs. Eventually I'll need to cut out a circle on each inboard layer to accommodate the bracket that will support the pipes that connect the two legs through the body, but that will come later. For now it's gluing and sanding these layers. Up next, the center leg.







*posted by Victor Franco at 9:18 PM* [0 COMMENTS](#)

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SUNDAY, AUGUST 14, 2005

### Marked Up Center Leg

Picked up yet more 1/2" plywood for the center leg. The center leg requires two 1/2" layers of plywood (inner layers), and two 3/4" layers of plywood (outer layers). Marked up the plywood to spec for cuts tomorrow.

*posted by Victor Franco at 9:09 PM* [0 COMMENTS](#)

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MONDAY, AUGUST 15, 2005

### Cut Out Center Leg

Managed to get the center leg completely cut out. All it needs is the Tape-Ease cylinder (called them twice, left a message, never heard back). As usual, my planning yesterday was for naught, the mark-ups weren't perfect. The center leg was about 10 times easier than the outer legs.

Glued one of the inner and outer layers of the center leg together.



*posted by Victor Franco at 5:10 PM* 0 COMMENTS

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TUESDAY, AUGUST 16, 2005

## Finished Gluing Together Center Leg Layers

Today I glued together the two other layers to the two layers that were glued yesterday. Will let dry overnight, and it should be ready for sanding. Tape Ease called back today, so the cylinder has been ordered. That will be used to create the curved portions of all three legs.

*posted by Victor Franco at 9:51 PM* [0 COMMENTS](#)

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WEDNESDAY, AUGUST 17, 2005

## Purchased More Parts

Bought lots of do-dads at Home Depot, Lowe's and Ace Hardware. Picked up the 1" and 3/4" gas pipe that will connect the arms/legs through the body, various screws, backing plates, pipe holders, etc. Some parts are duplicates and will need to be returned.

*posted by Victor Franco at 9:54 PM* [0 COMMENTS](#)

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THURSDAY, AUGUST 18, 2005

## Sanded Middle Leg

Did a first-pass sanding of the glued-up middle leg with 100 grit sand paper. Fairly smooth, but will do another pass before filling in with wood putty and re-sanding.

*posted by Victor Franco at 11:07 PM* [0 COMMENTS](#)

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SUNDAY, AUGUST 21, 2005

## Cut Shoulder Holes, Started Gluing Outer Legs

I cut the holes out of the shoulders that will support the shoulder assembly (gas pipe that attaches the two legs through the body). I also started gluing up the first two layers of the left leg.





Also bought assorted nuts, bolts, washers and a poor-man's drill press during visits to Lowe's & Home Depot.

*posted by Victor Franco at 10:27 PM* 0 COMMENTS

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MONDAY, AUGUST 22, 2005

## Glued Right Leg End Pieces

I glued together the two inner-most and outer-most leg pieces for the right leg today. These are small layers attaching to larger layers. Not picture-worthy (like anything is...).

*posted by Victor Franco at 10:35 PM* 0 COMMENTS

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TUESDAY, AUGUST 23, 2005



## Cylinder Arrives, Trim Shoulders, More Gluing

The Tape-Ease plywood cylinder arrived today. This is 27.5" long x 6" diameter x 5/16" thick wall:



I trimmed the middle shoulder layer to better accomodate the t-nuts that will hold the bolts of the shoulder assembly on:



Finally, I glued up another leg layer, albeit the last small piece before I glue the larger pieces together. Photo taken before I smeared the glue more evenly:



*posted by Victor Franco at 9:30 PM* 0 COMMENTS

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WEDNESDAY, AUGUST 24, 2005

## Scribed Shoulder Assembly Circles

I marked up the shoulder assembly circles to indicate where to drill the holes. Inner four holes are planned to be 1/4", outer six holes planned to be 5/16". Note that I still need to smooth these disks with a router. Also assembled my poor-man's drill press.



*posted by Victor Franco at 9:21 PM* 0 COMMENTS

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THURSDAY, AUGUST 25, 2005

## Started Drilling Shoulder Discs, Ordered More Resin Parts

I started drilling 1/4" wide holes for the shoulder discs. Four holes in each of the two shoulder discs, plus four holes in each of the two electrical backing plates, using my poor-man's drill press. Remember, I still need to round down the edge of each disc with a router (hopefully Saturday). The backing plate on the left disc below is a bit off-centered, but don't worry, the pipe connector on the other side is centered, and that's what matters most. I can always drill new holes in the

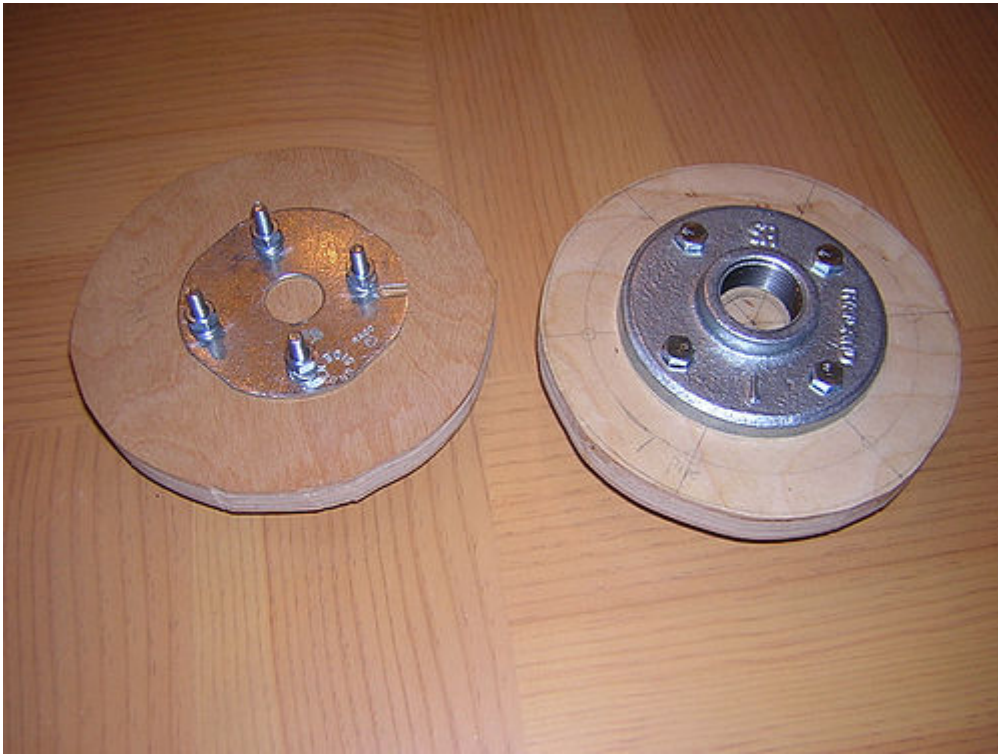


backing plate to re-center, if need be.

I also ordered several resin parts - front and rear logic display surrounds for the dome from Azman, and from Keith the radar eye, a pair of ankle cylinders and wedges, and a pair of ankle details (<http://www.geocities.com/resinparts/main.html>).







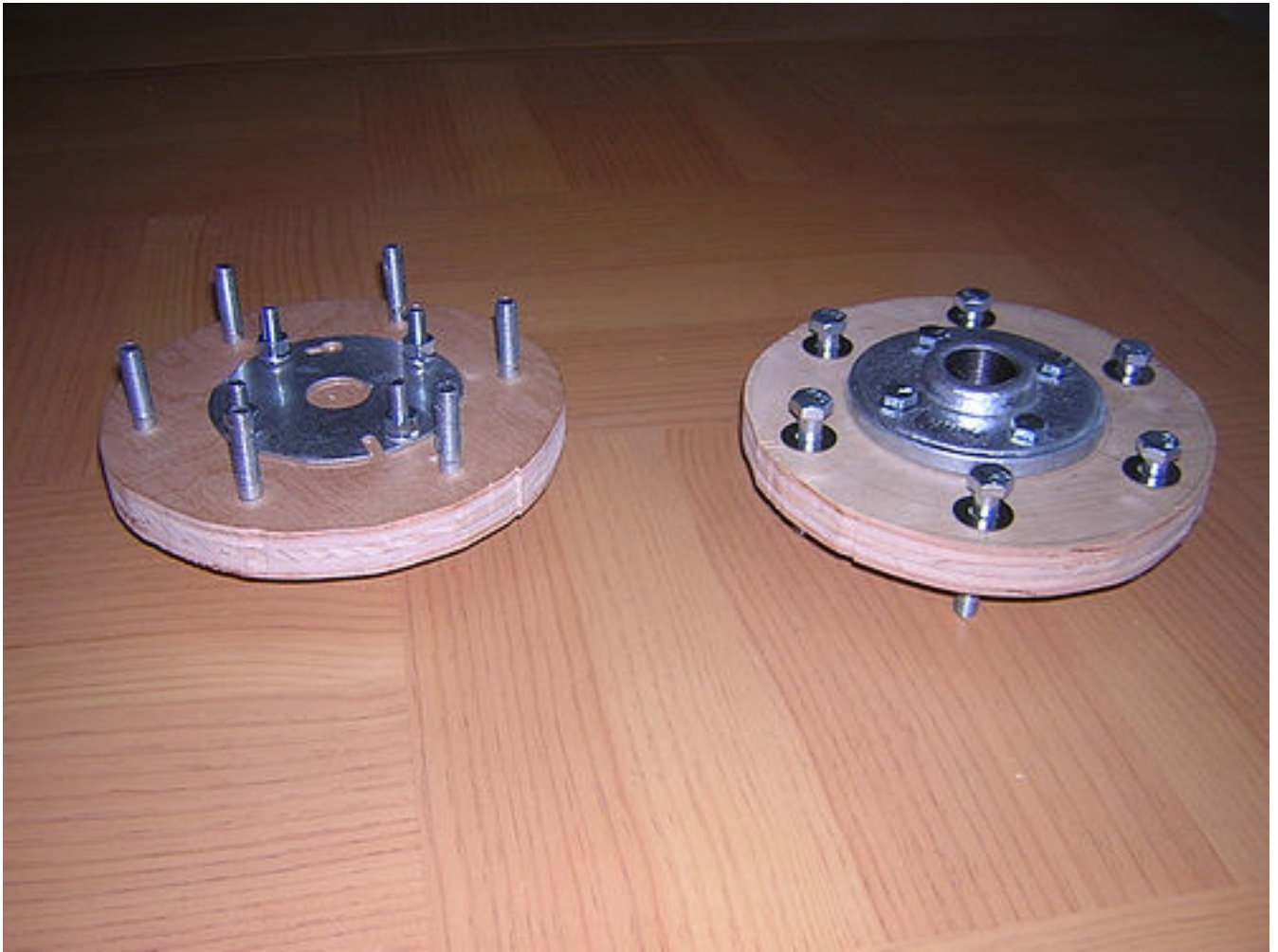
*posted by Victor Franco at 11:22 PM* 0 COMMENTS

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FRIDAY, AUGUST 26, 2005

## **Finished Drilling Shoulder Discs**

I drilled six 5/16" holes in each of the two shoulder discs, so the drilling is complete. Still need to route the discs into a smooth circle, and drill the holes for the t-nuts in the legs.



*posted by Victor Franco at 6:46 PM* 0 COMMENTS

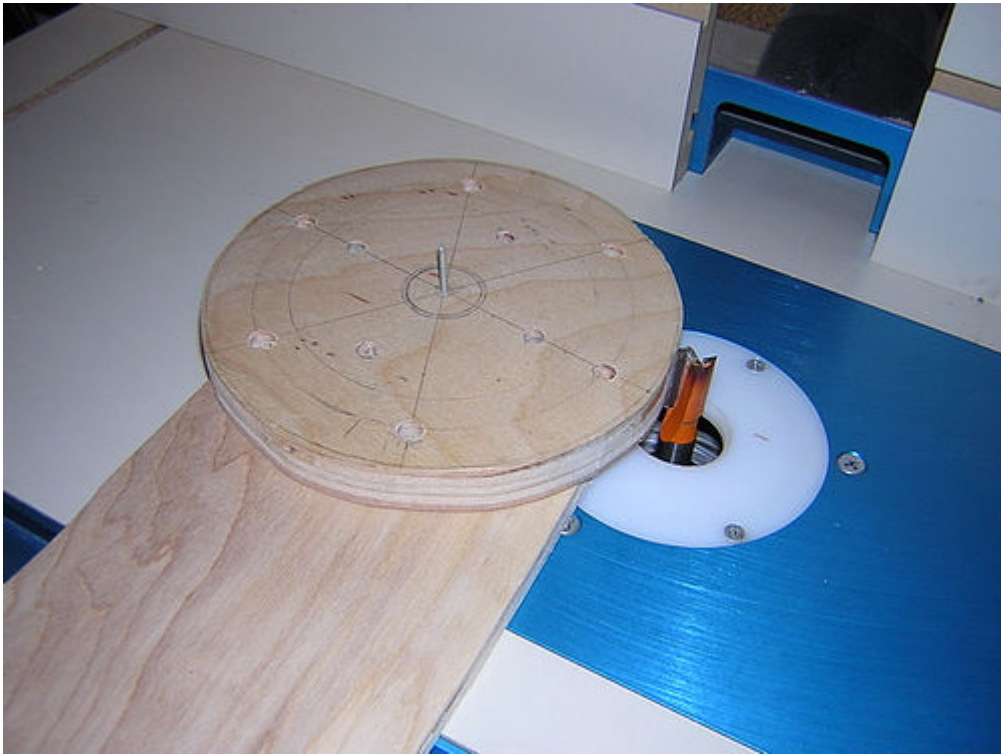
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SATURDAY, AUGUST 27, 2005

## **Rounded Shoulder Disc, Installed Tee-Nuts**

I finally had a chance to go over to Kelvin's today and use the router table to smooth out the edge for the (now) circular shoulder disc. After that I used his drill press to drill six holes into each shoulder for the tee-nuts, which I later installed at home.

At this point, I still need to drill some holes for the wires that lead to the motors, and then glue up the leg layers. I also need to figure out how to saw the Tape-Ease cylinder.





*posted by Victor Franco at 10:04 PM* [0 COMMENTS](#)

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SUNDAY, AUGUST 28, 2005

## Drilled Wire Holes, Started Gluing Right Leg Main Layers

I drilled holes out of the shoulder discs and inner-most shoulder area of the right leg to facilitate the electrical wires that will run from inside R2's body, down to the motors in the feet. I also began gluing the two outboard main leg layers on the right leg. Made a stop at Home Depot to pick up some more sand paper, DAP Plastic Wood, and an extra 5/16"x2" bolt to replace one of the existing bolts whose threads didn't seem to be quite right. Not picture-worthy (again).

*posted by Victor Franco at 8:32 PM* [0 COMMENTS](#)

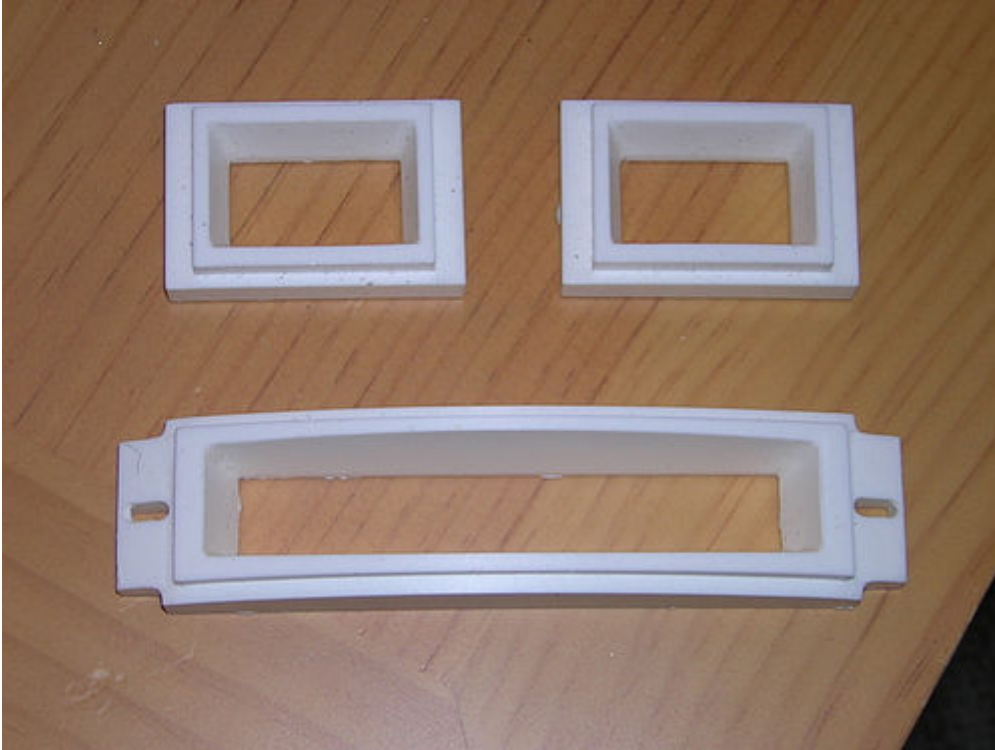
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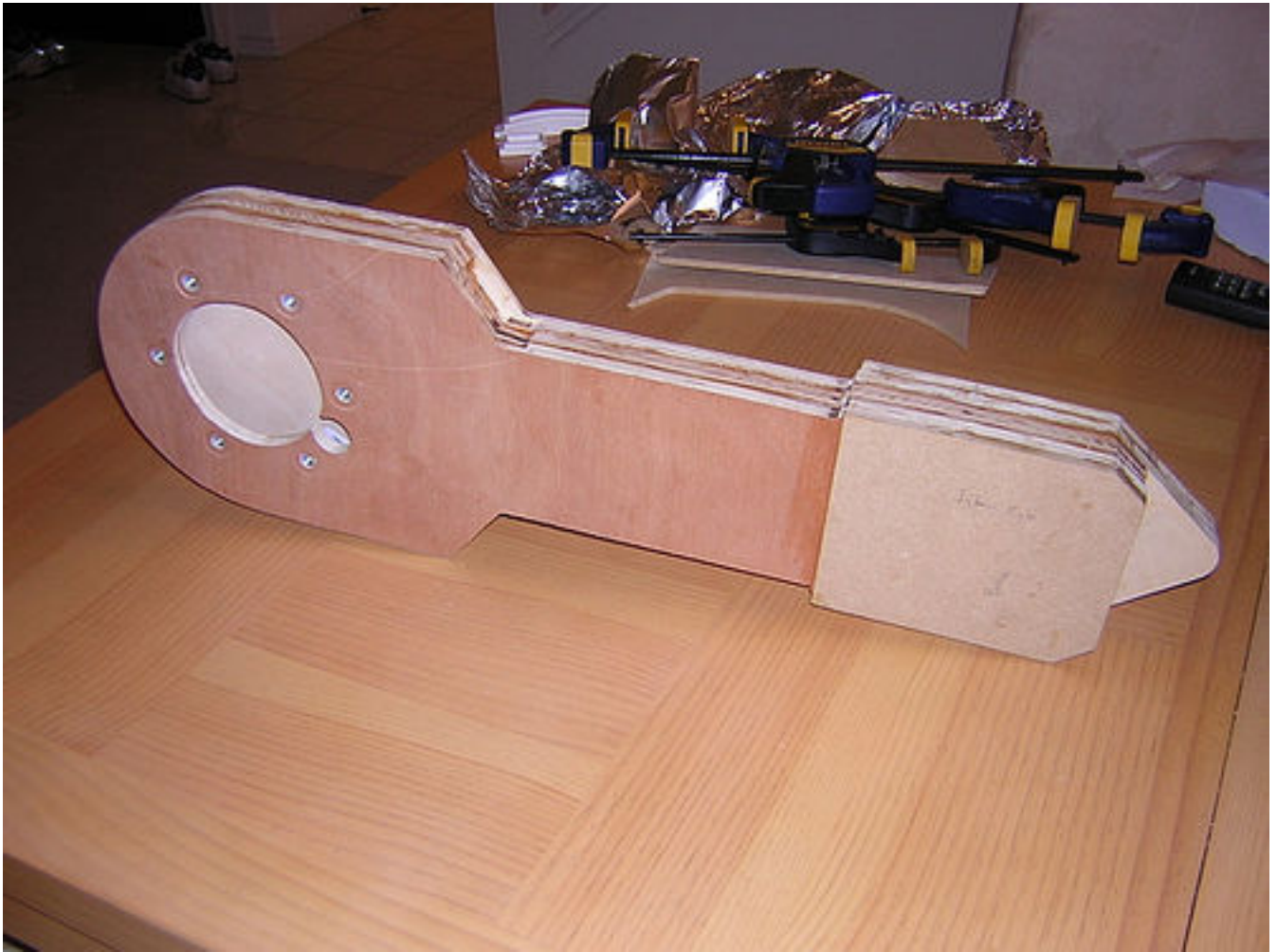
MONDAY, AUGUST 29, 2005

## More Resin Parts, Finished Gluing Right Leg

Azman's front and rear logic display surrounds arrived today. (Keith's parts were shipped today.) These frame the LEDs on R2's dome. The small ones go on the front, the larger one in the back. But why not make a face in the meantime?



I also finished gluing the right leg today! I started gluing the left leg's main outboard layers. Should be done tomorrow.



*posted by Victor Franco at 8:15 PM* 0 COMMENTS

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TUESDAY, AUGUST 30, 2005

### **Finished Gluing Left Leg**

I finished gluing the last layers of the left leg today. They don't look like much, but hopefully once they're sanded and painted they will look like real R2 legs. One day I'll find out how to cut the Tape-Ease cylinder, and at that point I can prime and maybe even paint the legs. Also ordered Pat's aluminum shoulder hubs. Also spent a frustrating evening at Home Depot trying to fit together 3/4" gas pipe into 1" gas pipe with no luck. May try the same exercise at Lowe's.



*posted by Victor Franco at 10:16 PM* 0 COMMENTS

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THURSDAY, SEPTEMBER 01, 2005

### **Keith's Resin Parts Arrive**

Keith Henry's excellent resin parts arrived. First and foremost, the radar eye (shown with Azman's lens), along with another set of ankle cylinders and wedges, and the ankle details. Thanks, Keith!



*posted by Victor Franco at 8:59 PM* 0 COMMENTS

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SATURDAY, SEPTEMBER 03, 2005

## Cut Cylinder Holders

Today I built of the easier parts to construct, the ankle cylinder holders, which look like little wedges underneath the ankle cylinders. Not even picture-worthy.

Also picked up some replacement gas pipe at Lowe's. The good news is that the 3/4" pipe fits cleanly into the 1" pipe. The bad news is there was an elbow joint stuck on the 1" pipe, and since it's the only one that made a good fit, I had to buy it like that (and pay about two bucks for the elbow) and now I have to figure out how to get it off!

*posted by Victor Franco at 8:40 PM* 0 COMMENTS

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SUNDAY, SEPTEMBER 04, 2005

## Putty, Sanding Legs

Worked DAP Plastic Wood into leg grooves and little holes in the plywood, and gave the legs a sanding after it dried.

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*posted by Victor Franco at 9:34 PM* 0 COMMENTS

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SATURDAY, SEPTEMBER 10, 2005

## Leg Grooves, Cut Tapease Cylinder

After several days of sanding and puttying the legs to get them smooth, I cut grooves into the legs where they belong. Well, almost where they belong. They don't all align perfectly, so I am going to fill at least one groove back in with putty and try again to get them to align.

I also practiced cutting the Tapease cylinder. My technique and results show more practice is needed. All in all a pretty disappointing day, as my results fell far short of the goal.



The LED kit arrived from Carl's Electronics. I had ordered three kits.



*posted by Victor Franco at 11:17 PM* 0 COMMENTS

SUNDAY, SEPTEMBER 11, 2005

## Recut groove

After somewhat botching the alignment of one of the grooves on the left leg yesterday (and subsequently filling the groove in with putty), I recut the groove to better align with the adjoining edges.

I also bought a soldering iron, solder, battery case, breadboard, 555 timer and wire at Radio Shack.

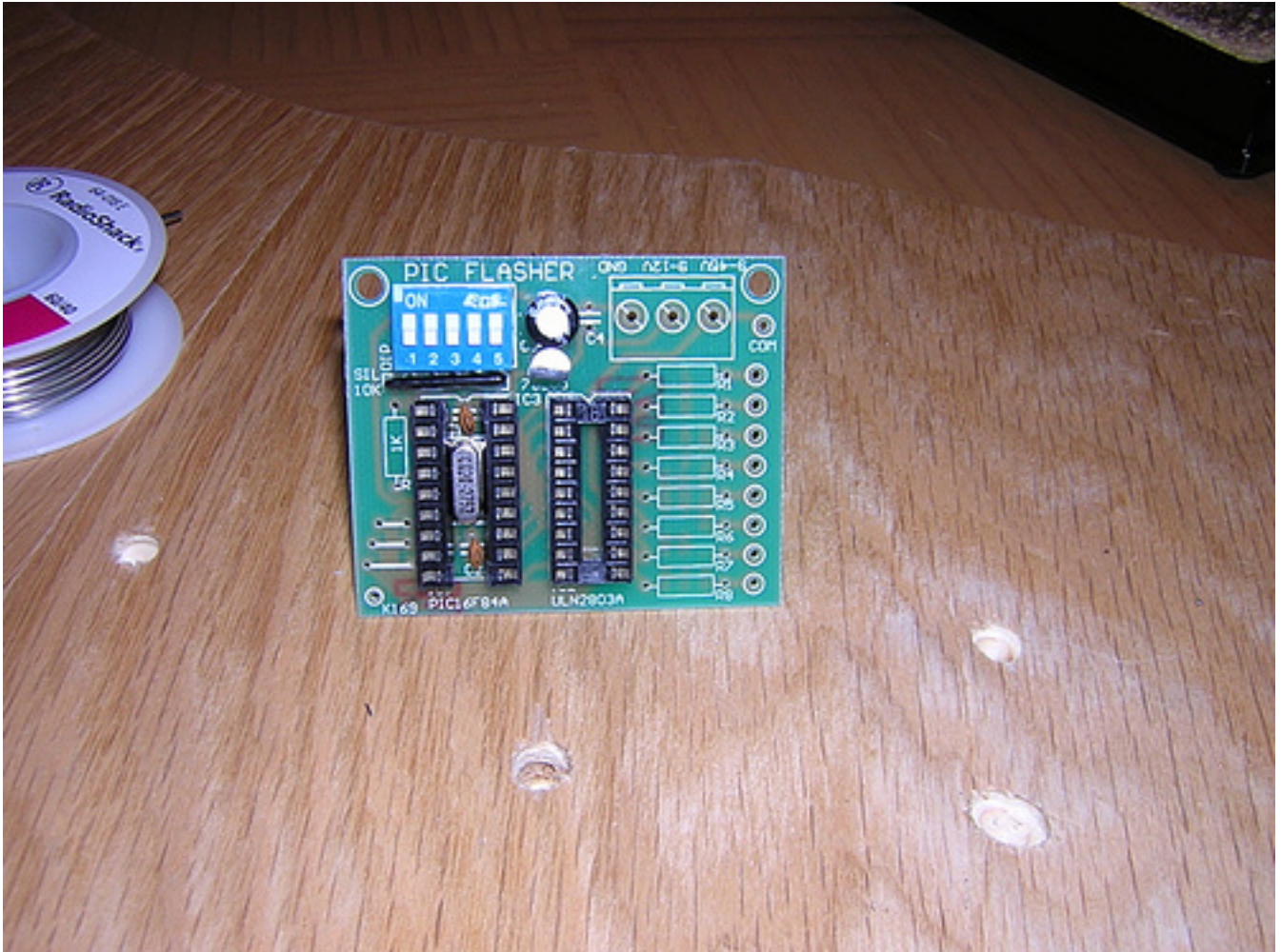
*posted by Victor Franco at 5:08 PM* 0 COMMENTS

MONDAY, SEPTEMBER 12, 2005

## Started Prototyping LEDs

Today I dusted off what little soldering experience I have, and started soldering my PIC flasher circuit that I ordered from Carl's Electronics. Soldering was a bit sloppy, but I think I haven't shorted any leads yet. I had to stop when I found that the package swapped 8 of one resistor type with what should have been 1 of another. I have two more kits to work with, but this was a good stopping point anyway.

I also picked up a soldering iron stand and desolder bulb at Radio Shack.



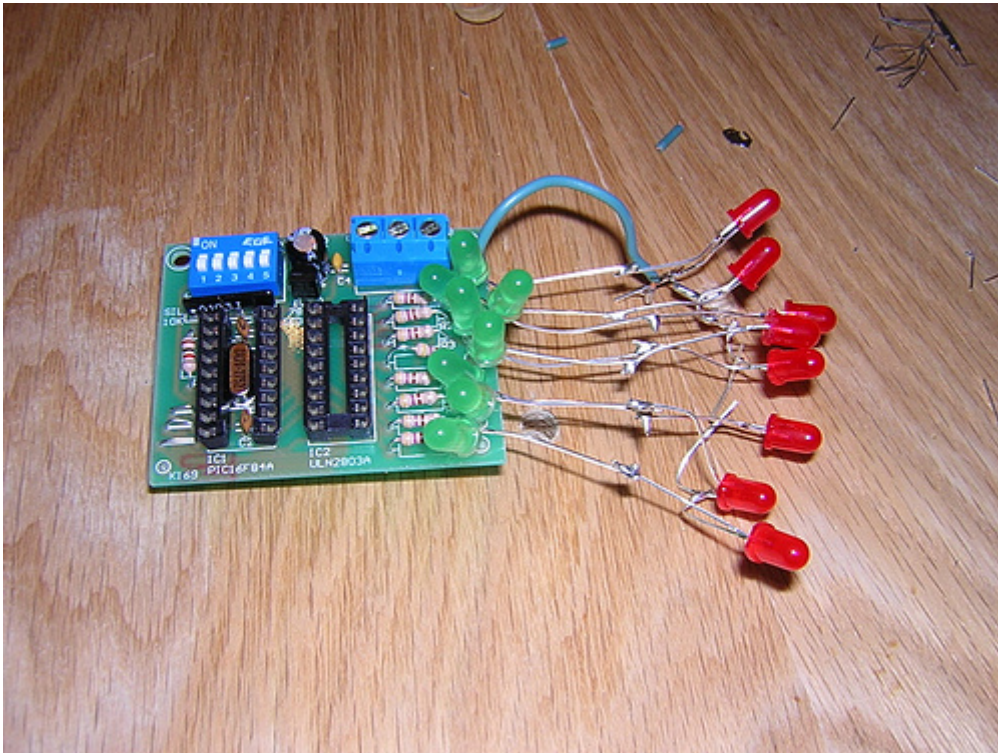
*posted by Victor Franco at 11:05 PM* 0 COMMENTS

TUESDAY, SEPTEMBER 13, 2005

## Finished Soldering Prototype LEDs

The good news: I finished soldering up the PIC flasher kit. The bad news: Nothing blinks. I have absolutely no idea what's wrong. More than likely I have one or more bad solder points. I've tried powering the thing with a single 9v battery and also four D cells in series, no luck. Very discouraging, and right now it looks like six hours and twenty bucks down the drain. (I know, the picture below shows two empty IC sockets, but they have since been populated correctly.)





*posted by Victor Franco at 10:12 PM* 0 COMMENTS

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WEDNESDAY, SEPTEMBER 14, 2005

## Lights Are Blinking!

Hooray! I started touching a multimeter to the power connectors, and found a bad solder joint on the 9-45v pin. Using a thumbtack (temporarily) completes the connection, and LEDs are blinking!

*posted by Victor Franco at 11:56 AM* 0 COMMENTS

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SATURDAY, SEPTEMBER 17, 2005

## LEDs Arrive

The blue and white LEDs I purchased from a seller on eBay arrived today. Hard to tell if the LED below is blue or white due to the camera flash! (It's blue, by the way. Everything but the LED looks awful without the flash, so I went with the flash pic). Also picked up a multimeter.





*posted by Victor Franco at 11:27 PM* 0 COMMENTS

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SATURDAY, SEPTEMBER 24, 2005

### **R2LA III**

What can I say? R2LA III at Mike Senna's place was a blast! It was the Superbowl of R2 events (this is coming from a guy who missed C3). Over 40 people showed up, six complete R2s, lots of veterans, some newbies (ahem), and a helicopter fly-over! Loved every minute of it. Thanks Mike and Amy!



*posted by Victor Franco at 11:02 PM* 0 COMMENTS

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MONDAY, SEPTEMBER 26, 2005

## Sanded Cylinder Holder, Purchased Router Table

Spent a little time after work sanding a groove into the Ankle Cylinder Holder, as called out by the blueprints. Will hopefully wrap that up tomorrow. Also bought a router table and adapter for the Porter Cable router at Sears.

*posted by Victor Franco at 9:45 PM* 0 COMMENTS

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TUESDAY, SEPTEMBER 27, 2005

## Sanded Cylinder Holder, Purchased Protractor, More Leg Work

I (hopefully) finished sanding the grooves in the ankle cylinder holders. Went to Home Depot, looking for wood hardener and a protractor. Found both, but the wood hardener (Minwax) had all but a skull and crossbones on it warning how many ways it could harm you. Since it said it was mainly for rotting wood, I passed. Wrapped up by going over the legs with Plastic Wood one more time, for (again hopefully) a final sanding. I still may refill in the groove in the legs and try again for better alignment, haven't decided.

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*posted by Victor Franco at 8:43 PM* 0 COMMENTS

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WEDNESDAY, SEPTEMBER 28, 2005

## Dome Arrived!

September 28. That date never meant much to me. School starts... brush fire season... days get shorter... But September 28, 2005 now ranks as an annual holiday, for today is the day I received my dome! The box was somewhat beat up, but thankfully the contents were in excellent condition, with no damage whatsoever. I was expecting a known defect at the top of the dome, but that was not present. All in all, a very happy day!



*posted by Victor Franco at 2:08 PM* 0 COMMENTS

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THURSDAY, SEPTEMBER 29, 2005

## More Leg Work

The leg work never ends. In my quest for as smooth a finish as possible, I did another round of sanding and gooping of putty. Will sand again tomorrow. "Will this suffering never end?"

*posted by Victor Franco at 8:03 PM* 0 COMMENTS

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FRIDAY, SEPTEMBER 30, 2005

## Tape-Ease Cylinder Cut

Finally! The Tape-Ease cylinder was cut with a band saw, and now I can finish the lower part of the legs. I need to cut one of the ends of the cylinder at a 55 degree angle, and then cover it with MDF. I also (what else?) did more sanding and puttying of the legs. Although you'd think the legs would be mostly putty and sand paper by now, they're not.



*posted by Victor Franco at 8:56 PM* [0 COMMENTS](#)

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SATURDAY, OCTOBER 01, 2005

## Sanded Cylinder to Size

Sanded the Tape-Ease cylinder wedge to size, by inverting a belt sander and running the edges of the arc along the sandpaper until the arc was of the proper size. Got stuck trying to figure out how to slide the cylinder along the table saw to make the 55 degree cutout it requires. Will hopefully resolve that tomorrow.

*posted by Victor Franco at 4:29 PM* [0 COMMENTS](#)

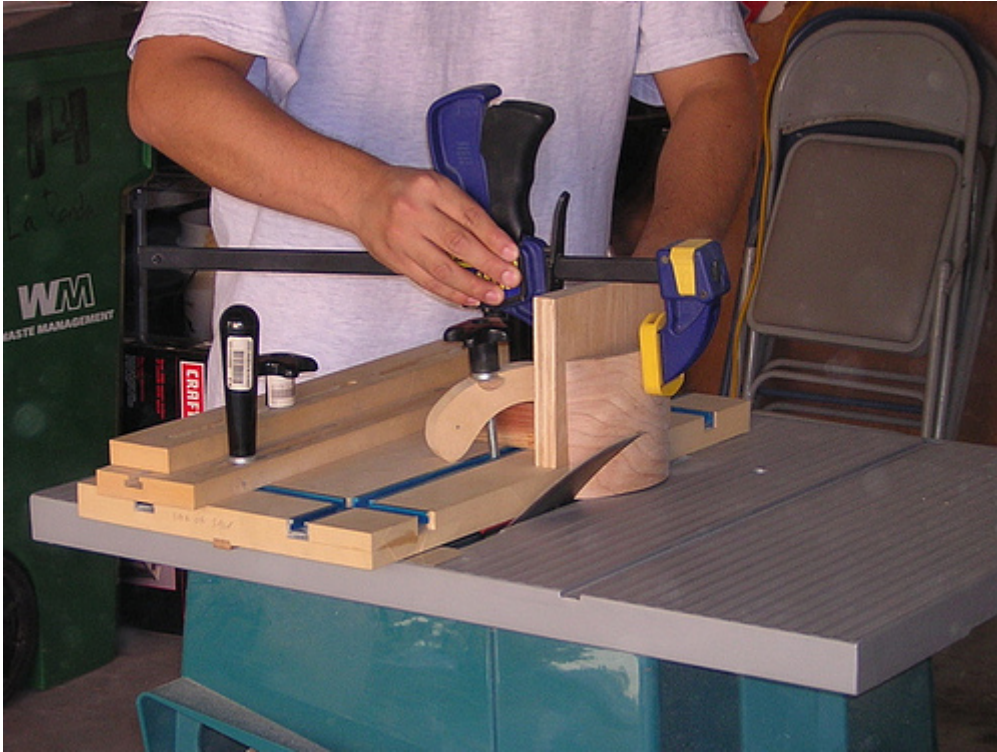
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SUNDAY, OCTOBER 02, 2005



## Tape-Ease Angle Cuts

Again thanks to my buddy Kelvin, we were able to make the 55 degree angle cuts on the round part of Artoo's ankle. We had to create a custom jig onto which we clamped the cylinder arcs, and then we were able to make the cuts by clamping the cylinder arc along side the sled.





*posted by Victor Franco at 5:00 PM* [0 COMMENTS](#)

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TUESDAY, OCTOBER 04, 2005

## **Angle Cuts Covered, Grooves Filled**

I jigsawed a rough cut of the covers for the angle cuts for the covered portion of the Tape-Ease Cylinder. These will be routed down to size using Mike Senna's (un)patented routing technique. I also decided to bite the bullet and fill in some of the grooves on the legs and try redoing them (soon, hopefully). Almost none of the grooves on each side matched, save one.



*posted by Victor Franco at 8:57 PM* 0 COMMENTS

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SATURDAY, OCTOBER 08, 2005

## **Routed Cylinders, Dug Out Armpits**

(How's that for a blog title?) With Kelvin's help yet again, we routed the overhang of the MDF on the Tape-Ease cylinder. Some sanding and puttying and more sanding later, and this area will be done(!). Also worked on the area in Artoo's "armpit" where the shoulder stabilizer will go. I needed to make this a bit deeper and more rectangular. I inset some 1/8" MDF for a smoother surface (not glued in yet). I only got about 1 1/4 out of 4 of these dug out. Used a Dremel and a chisel. Very slow and tedious.





*posted by Victor Franco at 10:26 PM* 0 COMMENTS



FRIDAY, OCTOBER 14, 2005

## More Armpit Digging

After several days of having no time available to work on R2, I managed to squeeze in some time today to continue working on chiseling out the armpits for the stabilizers. One leg is done, the other needs a little bit more work. Still to do: Recut grooves around leg, fix up minor nicks during chiseling, and glue on the Tape-Ease cylinder section. And this is just for the inner leg. Nothing started yet on the outer leg (although I did order Andy's styrene horseshoes, and I already own the aluminum shoulder buttons and hydraulics).

*posted by Victor Franco at 10:05 PM* [0 COMMENTS](#)

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SATURDAY, OCTOBER 15, 2005

## Finished Armpits, Recut Grooves

I finally finished chiseling out the armpits. I'll need to recut the 1/8" MDF that goes in there, as the original pieces are now a bit too small for the larger space into which they will fit. I also recut the ankle grooves. They are very much in alignment now, although a portion of one groove is cut a bit too deep (probably repairable with putty). Need to putty up the nicks here and there, and use a hacksaw to cut edge grooves.

*posted by Victor Franco at 11:05 PM* [0 COMMENTS](#)

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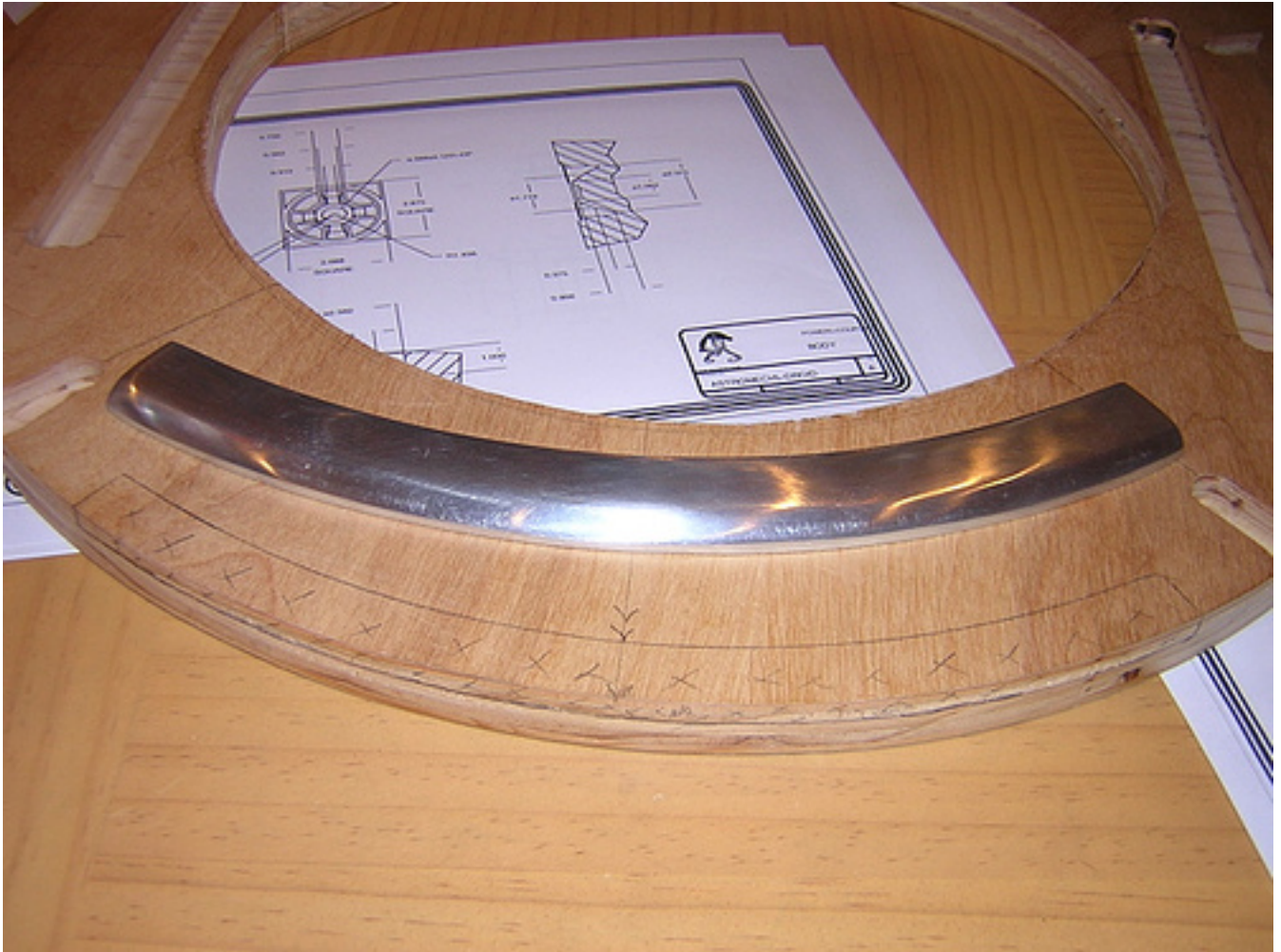
SUNDAY, OCTOBER 16, 2005

## Finished Grooves, Marked Frame, Glued Center Cylinders

The title sounds like I was more productive than I actually was. I did manage to finally fix the grooves circumscribing the outer legs, and they are in good alignment all the way around now. Half-way done with the first side-of-the-leg cut here:



I am starting to revisit the frame that I haven't touched since, what, mid-July? I will need to route out certain areas to accomodate parts, such as the Large Data Port, Octagon Ports, Power Couplings, and Coin Returns (there will be a few other spots too). So I've started to mark the areas of the frame that will need routing.



Finally, I glued on the Tape-Ease cylinder area to the center leg (both sides). Because of a goof-up that I noticed a while ago, I will need some putty to finish the corner where the sloped area meets the leg.



*posted by Victor Franco at 10:43 PM* 0 COMMENTS

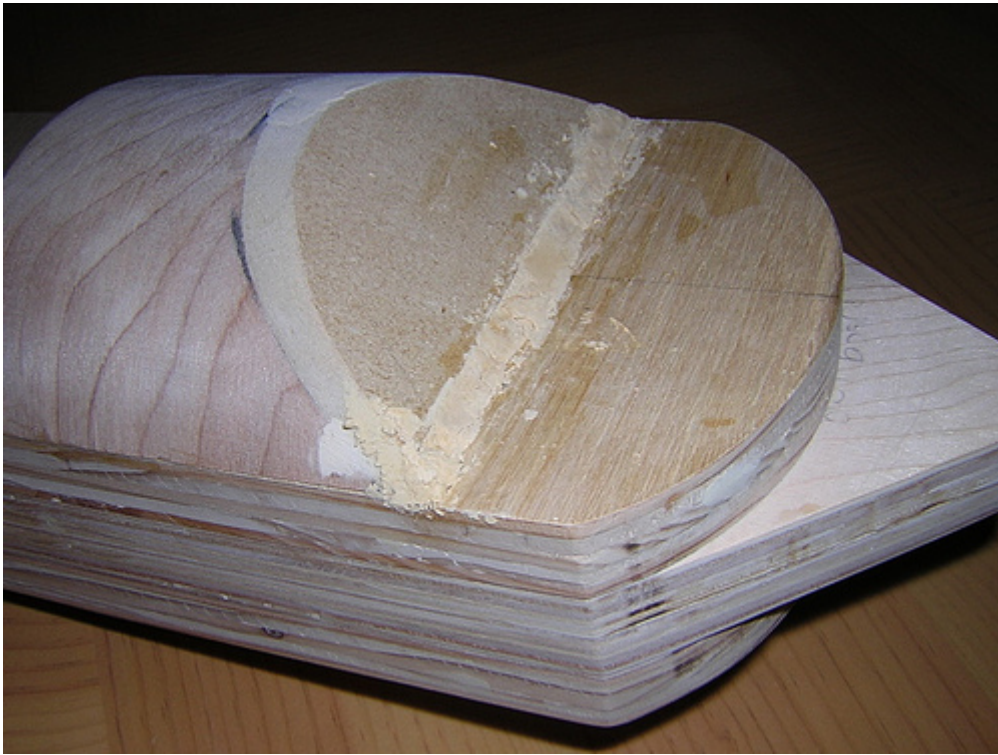
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WEDNESDAY, OCTOBER 19, 2005

### **Puttied Cylinder Corner**

I added some Plastic Wood putty to where the MDF that is attached to the Tape-Ease cylinder meets up with the center leg (I only did one side, will do the other side next). This was necessary because I goofed when I glued the MDF onto the cylinder section. Obviously I still need to sand this mess.





*posted by Victor Franco at 9:56 PM* 0 COMMENTS

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THURSDAY, OCTOBER 20, 2005

## Puttied Cylinder Corner II

Sequel to yesterday. I sanded the puttying I did yesterday, and did a bit of touch-up. I next puttied up the reverse side of the center leg of the Tape-Ease cylinder MDF section where it meets the leg.

*posted by Victor Franco at 8:01 PM* 0 COMMENTS

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FRIDAY, OCTOBER 21, 2005

## Finished Sanding Cylinder Corners

I sanded both sides of the center leg where the angled Tape-Ease cylinder meets the leg. I know, it ain't 100% perfect, but pretty close. I think I'll primer it and see how it looks.



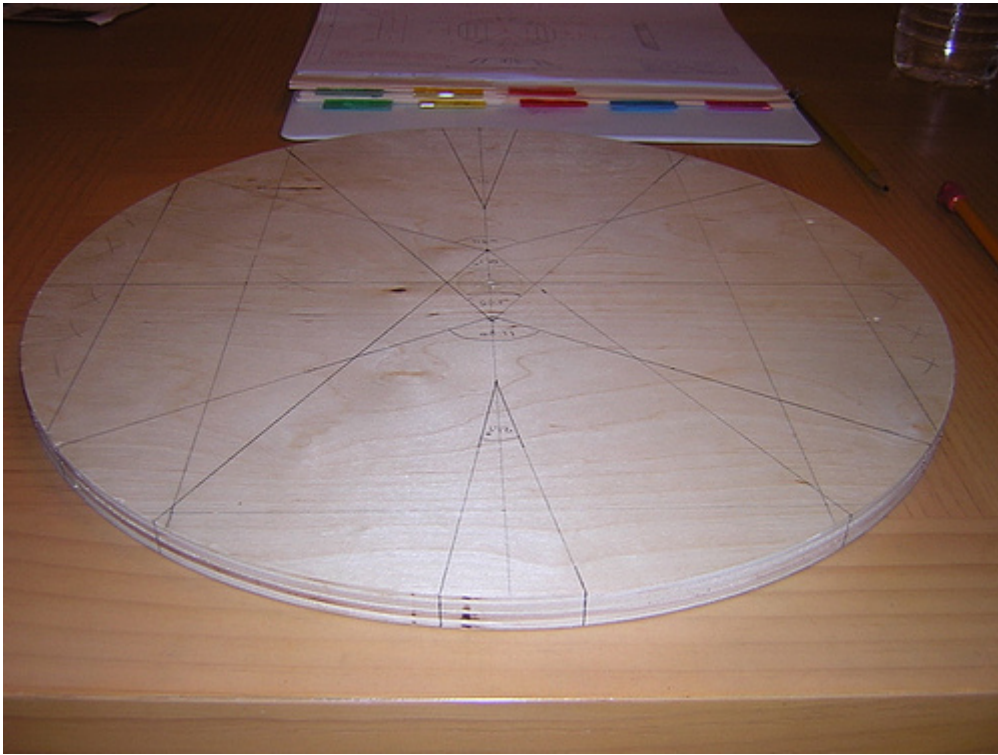
*posted by Victor Franco at 10:39 PM* 0 COMMENTS

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SATURDAY, OCTOBER 22, 2005

## **Glued Side Tape-Ease Cylinders, Started Skirt**

I glued on the Tape-Ease cylinders to the side legs today. Then I got a late start on working on the skirt, following an advance look at the tutorial that Mike Senna has put together. All I got done was the cutting out of the base circle, and the marking up of where the center leg hole will be, and the angles that lead to the side strips of wood on the edging of the skirt.



*posted by Victor Franco at 8:47 PM* 0 COMMENTS

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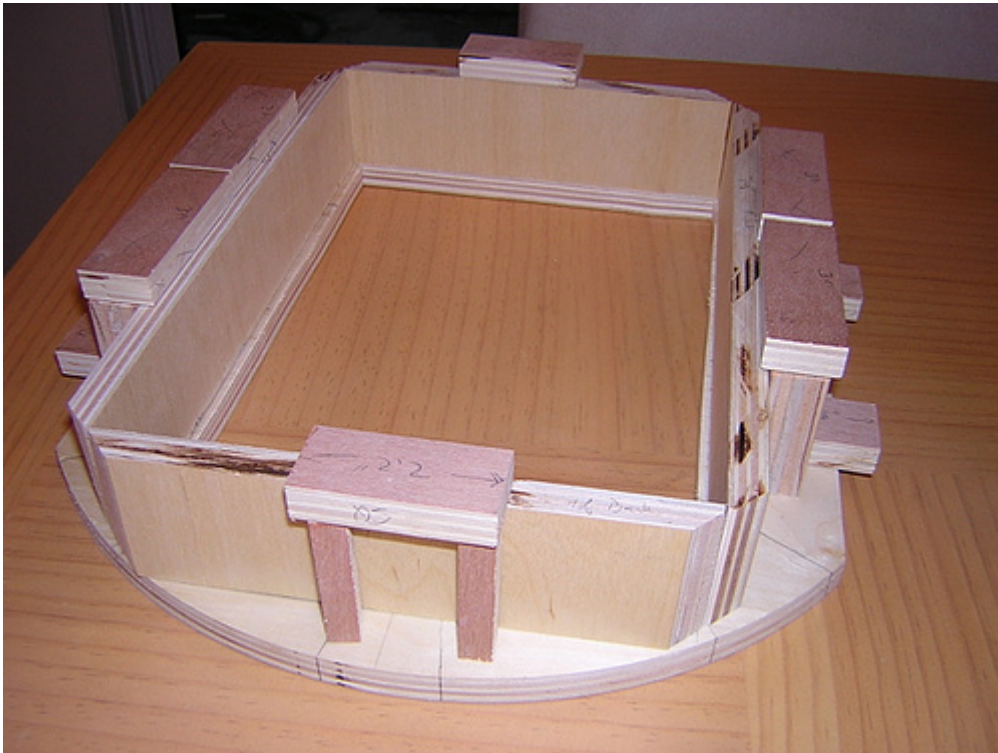
SUNDAY, OCTOBER 23, 2005

## Skirt Cut Outs

I was able to spend a fair amount of time today cutting out various elements of Mike Senna's skirt design. First, I sliced the straight parts of the base circle that I cut out yesterday. Next I cut out the sides for the box that go around the center leg opening, including angle cuts on the corners. Then I cut a series of supports, some vertical, some horizontal. I also cut the MDF for the skirt ribbing. Finally, I cut the side supports that serve as the sides of the skirt and will be visible from the outside. Nothing has been glued up yet.

I still need to cut the MDF strip into 12 pieces for the ribs, and make angle cuts on them.





*posted by Victor Franco at 9:38 PM* 0 COMMENTS

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MONDAY, OCTOBER 24, 2005

## Skirt Center Box Glued

Tonight I glued up the box that goes around where the center leg enters the bottom of the skirt. Short and simple.

*posted by Victor Franco at 11:45 PM* 0 COMMENTS

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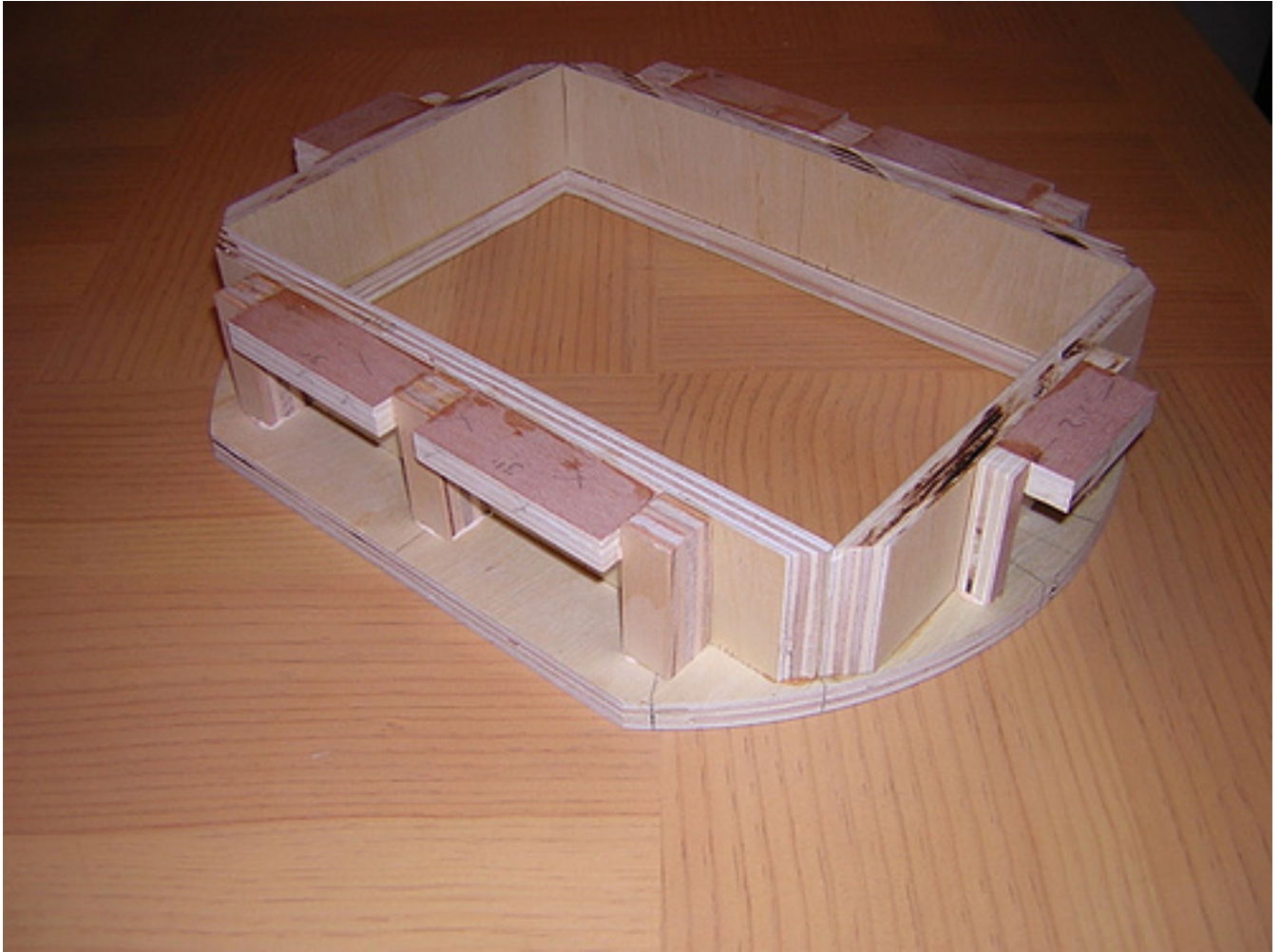
TUESDAY, OCTOBER 25, 2005

## More Skirt Gluing

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I glued most of the supports for the skirt today:



*posted by Victor Franco at 11:43 PM* 0 COMMENTS

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SATURDAY, OCTOBER 29, 2005

## **Skirt Box Routed, Sides Glued**

Today I routed the rectangle where the middle leg will lead through the skirt flush with the box built above and around it. I also glued on the sides of the skirt that will be visible from the outside. I still need to glue some more supports for these sides, and obtain some styrene for the curved part of the skirt in the front and back.



*posted by Victor Franco at 9:59 PM* 0 COMMENTS

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SUNDAY, OCTOBER 30, 2005

## Finished Gluing Skirt Supports

I glued in the four supports for the sides of the skirt today. Too many pictures of virtually the same thing, so I'll forego pics today.

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*POSTED BY VICTOR FRANCO AT 4:05 PM* 0 comments MONDAY,  
OCTOBER 31, 2005

## Horseshoes Arrived

Happy Halloween! Andy and Alex' layered shoulders (aka "horseshoes") arrived today! The aluminum pieces are the ones that I received from Ryan, back on June 27, 2005.



*posted by Victor Franco at 5:08 PM* 0 COMMENTS

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FRIDAY, NOVEMBER 04, 2005

## Curved Styrene Skirt Cut

I gave a shot at cutting out the curved part of the skirt, which I am making from styrene, per Mike Senna's tutorial. The result was pretty close to being correct, but I'm going to give it another shot tomorrow. I need to make two of these total.

*posted by Victor Franco at 10:53 PM* 0 COMMENTS

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SATURDAY, NOVEMBER 05, 2005

## Worked on Skirt, Primered

I sanded the putty touch-up on the skirt, and then proceeded to start applying primer to the skirt frame and center leg. The primer does really show where I missed covering up the wood grain, so I may experiment to see if I can post-primer putty.

I worked on the armpits of the legs some more, using the drum sander Dremel attachment to smooth them out. I think they're just about ready.

Finally, I cut out a second curved styrene piece for the skirt, although it needs to be trimmed to length.

Oh yeah, and I picked up another R2 toy at Costco today! :)

*posted by Victor Franco at 8:58 PM* [0 COMMENTS](#)

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SUNDAY, NOVEMBER 06, 2005

## Dremeled Skirt, Recut Armpit MDF, Puttied Legs

I used the Dremel to grind off a bit of wood on the inner part of the skirt where the Styrene will need to rest. Next I recut some of the MDF pieces that will fit in the armpits. Finally, I decided to take the pluge and apply a (somewhat uneven) layer of Plastic Wood to each of the legs' edges. I only covered about half of each leg, I'll sand and cover the other half next.

*posted by Victor Franco at 10:47 PM* [0 COMMENTS](#)

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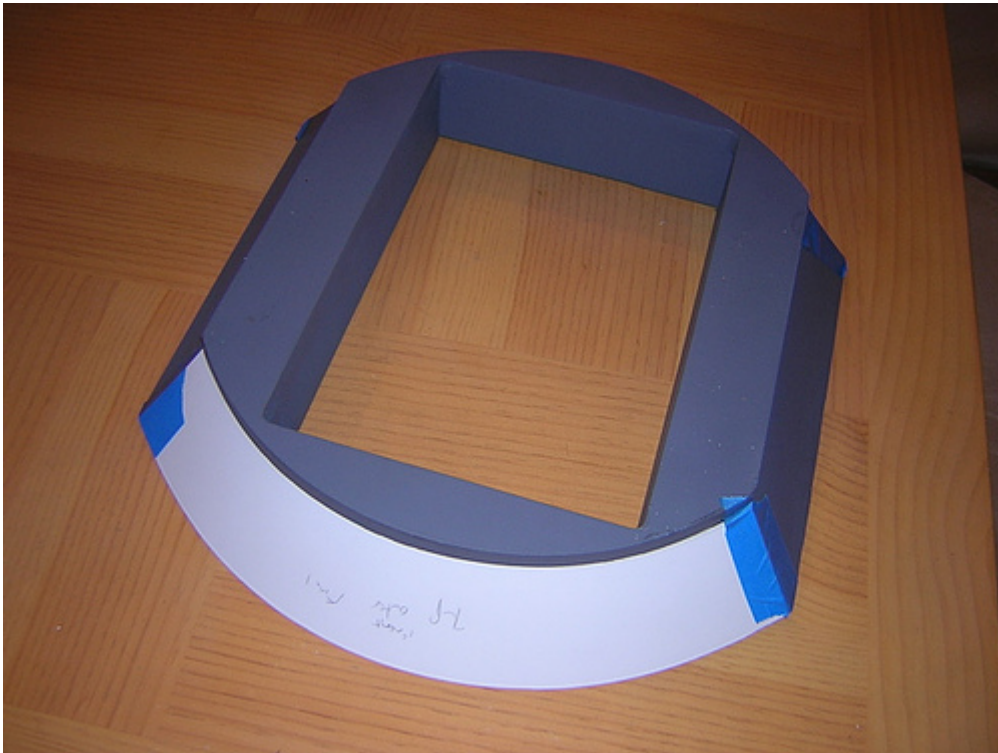
MONDAY, NOVEMBER 07, 2005

## Finished Cutting Styrene for Skirt

I finished cutting the curved styrene parts of the skirt tonight. As you may have guessed, it isn't easy to get these perfect, and mine are still not 100% perfect, but I think they'll do.

Right now they're taped on. I still need to glue them in, and cut and glue the ribs that go on the styrene.





*posted by Victor Franco at 9:51 PM* 0 COMMENTS

## Reorganized Web Page

Okay, even *I* thought the web page was getting out of hand. So rather than show every post in history, I've changed the front page to only show the last 30 posts. All posts are still available by clicking on the various monthly archive links on the right.

*posted by Victor Franco at 9:48 PM* 0 COMMENTS

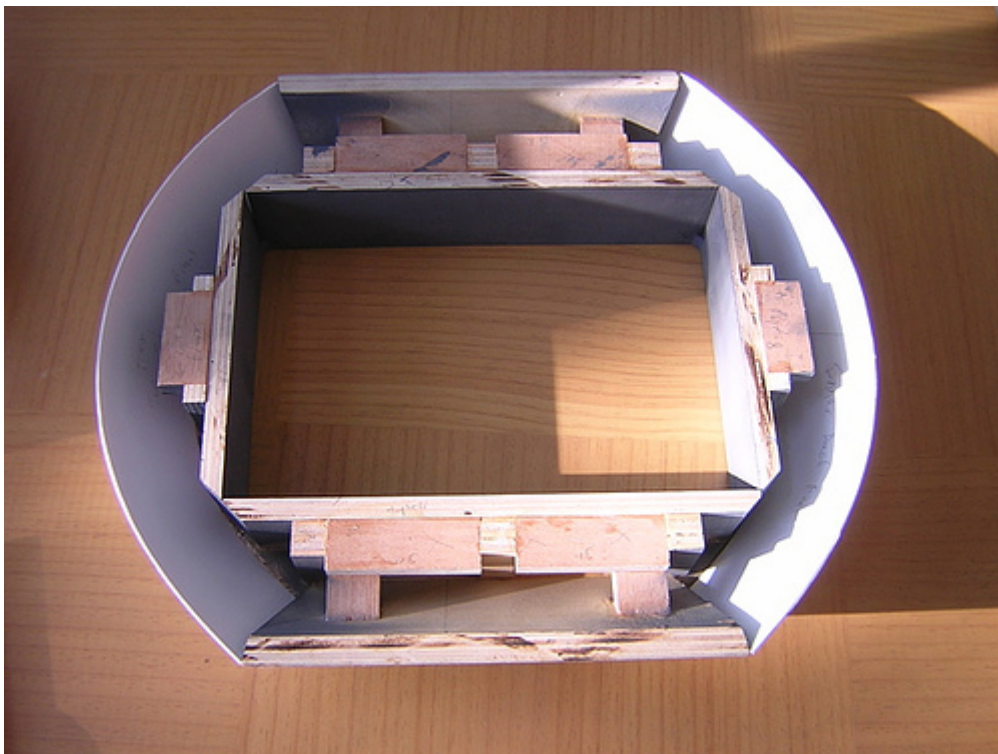
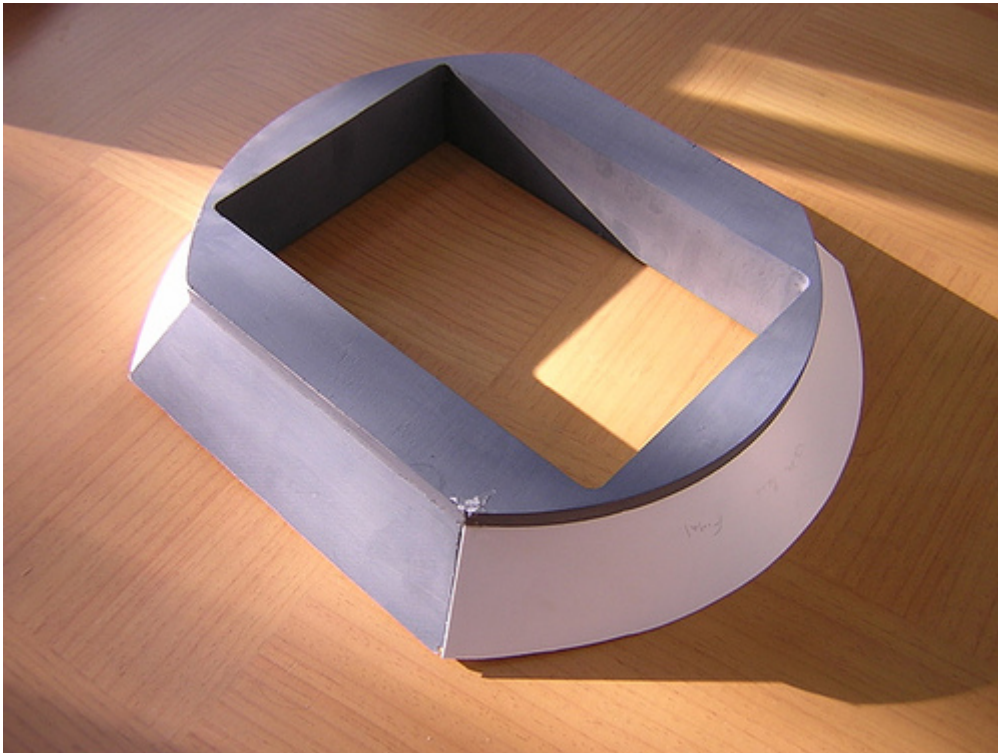
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SATURDAY, NOVEMBER 12, 2005

## Sanded Legs, Glued Styrene on Skirt

I spent the morning sanding the legs where I added lots o' Plastic Wood wood filler. Legs may be done with puttying and sanding real soon.

Spent the afternoon working on the skirt, mainly gluing the styrene onto the wooden skirt (primered in gray). Here are a couple of views, upside-down and right-side up. (Yeah, a little bit of newspaper stuck to the glue in one corner, I'll sand that out.)



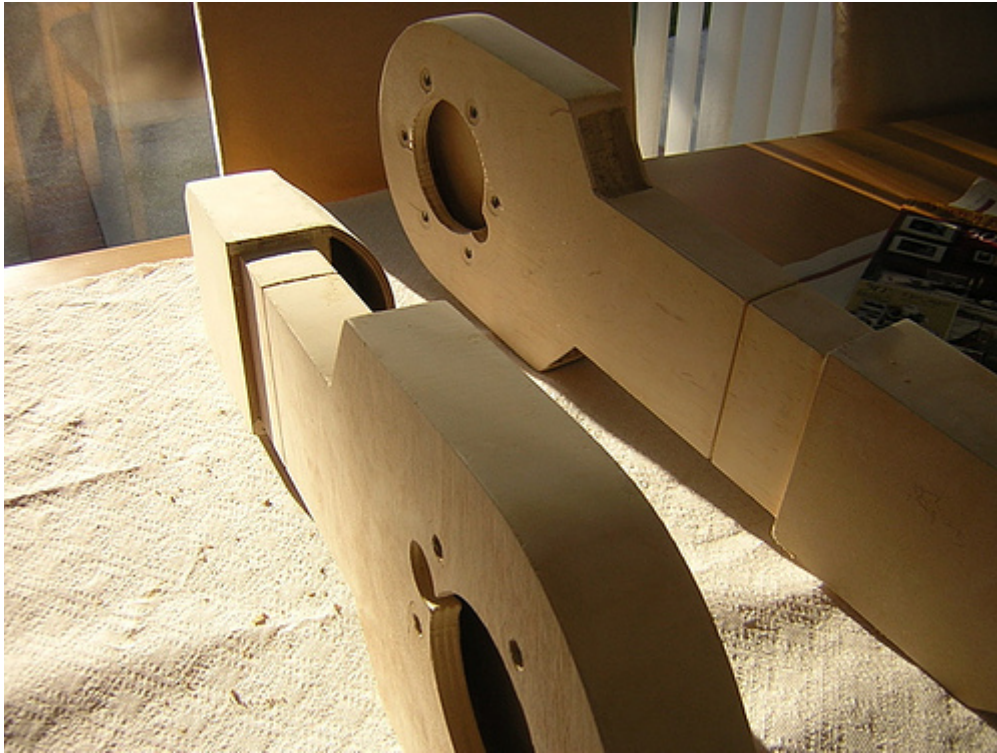
*posted by Victor Franco at 9:16 PM* 0 COMMENTS

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SUNDAY, NOVEMBER 13, 2005

## Sanded/Puttied Legs, Cut Skirt Ribs

The end is near for the sanding and puttying of the legs. They are just about done (really). Here's a so-so look:



Next I cut the ribs for the skirt:





*posted by Victor Franco at 10:10 PM* 0 COMMENTS

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THURSDAY, NOVEMBER 17, 2005



## Primered Skirt Ribs & Other Detailed Work

This morning I put a coat of primer on the skirt ribs, and a second pass on the center leg. Got home, sanded down the primer with 400 grit sand paper, and did another round of primer. Finished marking up base plate of frame where routing needs to take place to make room for various details (power couplings, octagon ports, coin returns, pocket vents).

I ran a test of the Minwax wood hardener on a piece of scrap with Plastic Wood coated on one edge (similar to the legs) and it seemed to work, so I think I will try the wood hardener on the edges of the legs with Plastic Wood as well as the sides. I do want to make sure the wood hardener handles a coat of primer well first, though.

Let's see, what else? Well, I need to file the styrene on the skirt, as I did my first setting of the frame on the skirt, and it was evident that the top of the styrene was hitting the bottom of the frame too high in places. Who knows, I may even redo the styrene if I'm too unhappy with it, but let's see how the filing goes first.

*posted by Victor Franco at 11:10 PM* [0 COMMENTS](#)

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SATURDAY, NOVEMBER 19, 2005

## More Primer, Wood Hardener, Skirt Work, etc.

More primer on center leg. Applied Minwax wood hardener to left and right legs, thus declaring the base form of the legs COMPLETE. Filed styrene on skirt to be more level and more aligned with the wooden siding. Drilled holes for router table adapter I'm building.

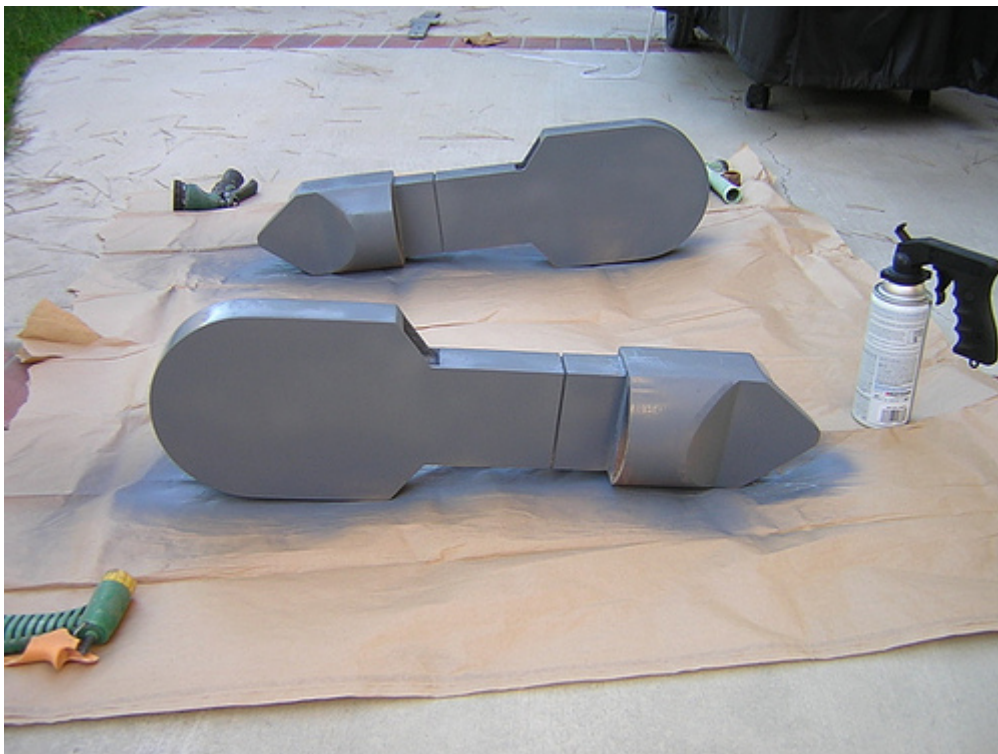
*posted by Victor Franco at 9:37 PM* [0 COMMENTS](#)

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TUESDAY, NOVEMBER 22, 2005

## Started Primering Legs

Wow. After all these months of staring at wooden legs, I finally started applying primer to them. As odd as it seems, I consider this quite a milestone. Here's the before/after:



Michael McMaster's excellent C3 DVD set also arrived today. :)

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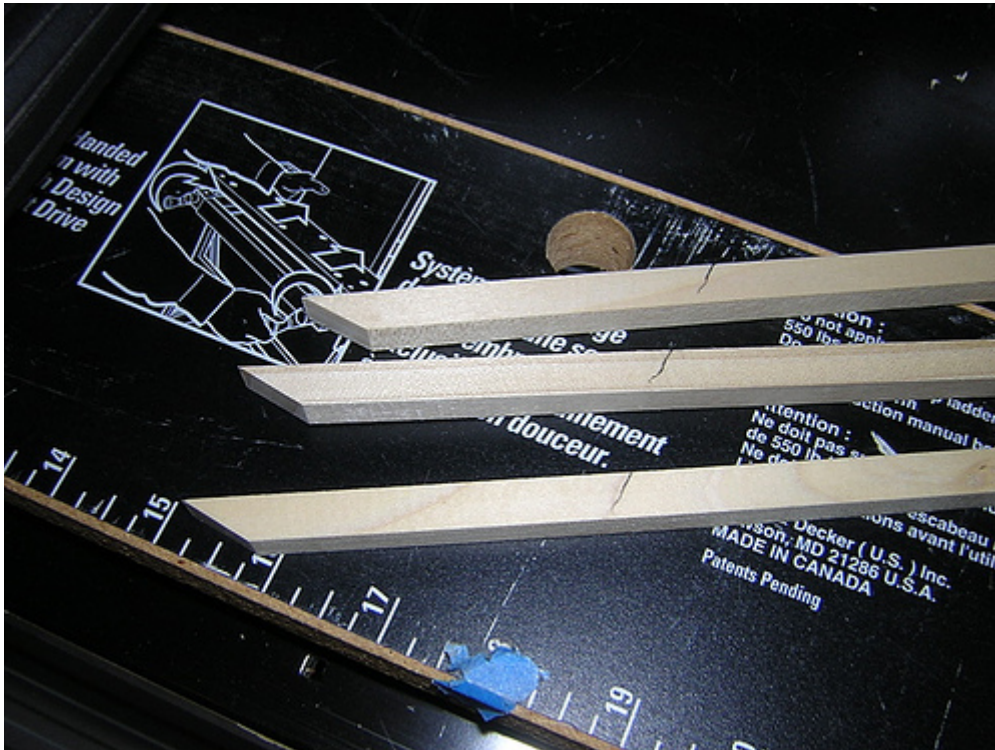
*posted by Victor Franco at 11:51 PM* 0 COMMENTS

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SATURDAY, NOVEMBER 26, 2005

## More Priming and Sanding, Recut Skirt Ribs

Just like puttying and sanding, the priming and sanding will go on indefinitely. Still trying to get the legs ~100% smooth. I also tried recutting the skirt ribs, with trials using 1/2" square and 3/8" square dowels to see if they would align with the skirt base better. The 1/2" dowel was much too large, the 3/8" dowel was just a touch too tall, but 1/8" too narrow to spec. I may try cutting some of the 1/2" dowels down to just under 3/8" in one of the dimensions to see if I can get it just right.



*posted by Victor Franco at 6:07 PM* 0 COMMENTS

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SUNDAY, NOVEMBER 27, 2005

## Skirt Ribs - Third Try's the Charm

Let's see... First I tried using 1/4" MDF strips 1/2" wide for skirt ribs, but they ended up being too short. Then I tried 3/8" square dowels, but they ended up being too tall and narrow. What to try next?

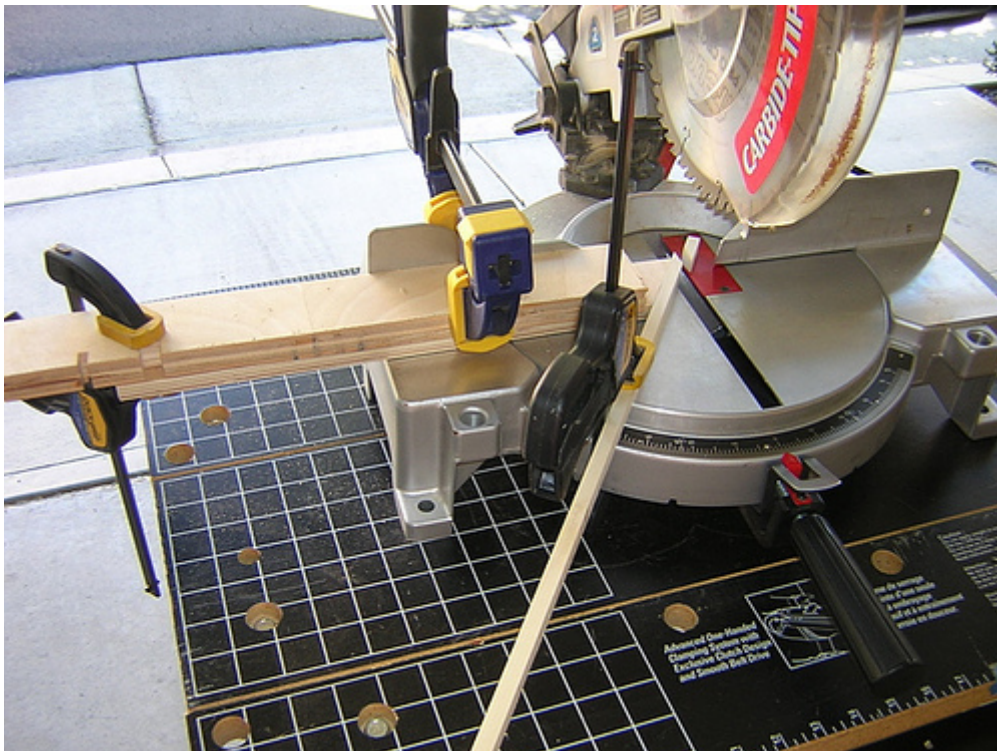
I took 1/2" square dowels and trimmed them in one of the dimensions to a little



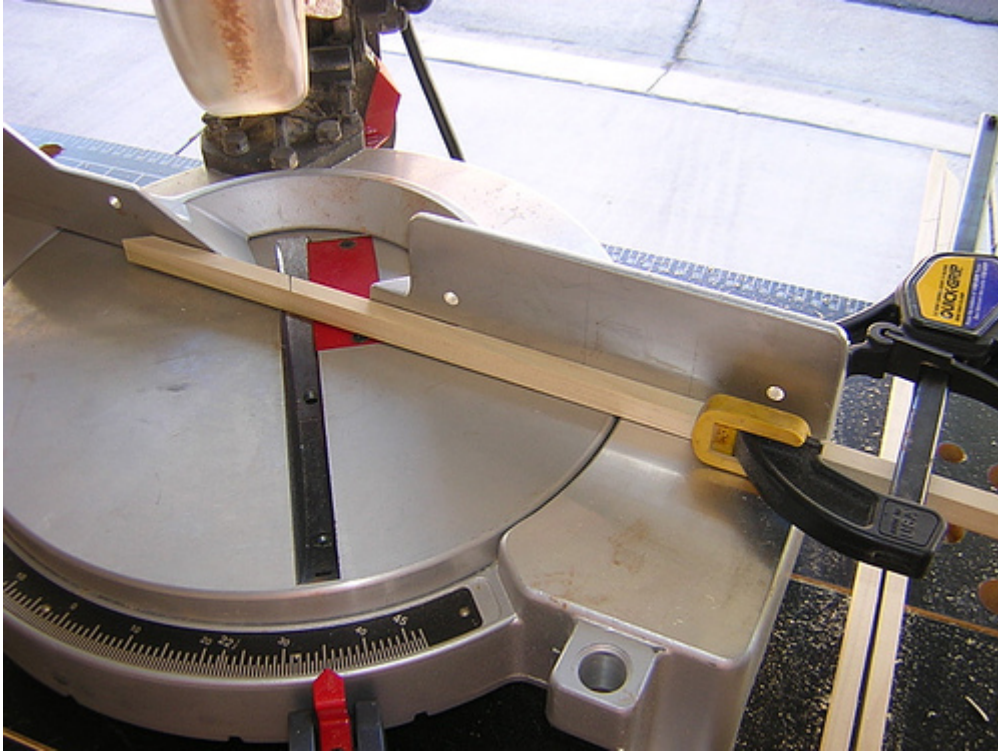
less than  $\frac{3}{8}$ ", leaving them  $\frac{1}{2}$ " wide in the other dimension, as the blueprints suggest. First I had to trim the dowels (carefully and safely) using the table saw:



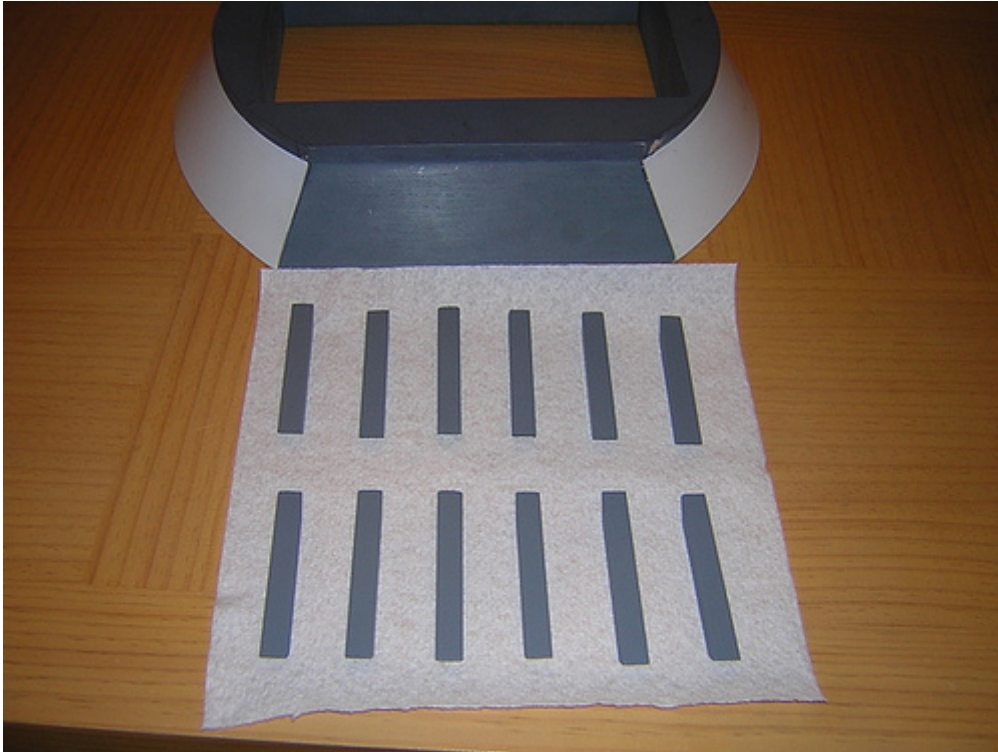
Next I cut the steep angle that rests up against the bottom of the skirt:



Then I cut the other angle that runs parallel with the top of the skirt. This will be cut flush with the top of the skirt later using the router to shave off the part that rides above the top of the skirt:



Finally I primed them, along with the legs that I had been sanding and priming throughout the weekend:



I just need to glue the ribs on and route them down to size. May need to sand the inboard parts of the ribs to make them fit the skirt snugly in places too.  
*posted by Victor Franco at 5:24 PM* [2 COMMENTS](#)

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THURSDAY, DECEMBER 01, 2005

### More Resin Parts

Another outstanding batch of resin parts arrived from Keith today. The order was comprised of pairs of octagon ports, power couplings, inner & outer half moons, leg struts, and a coin slot strip. Thanks again, Keith!





*posted by Victor Franco at 10:26 PM* 0 COMMENTS

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FRIDAY, DECEMBER 02, 2005

## Feet Arrive

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The budget feet I purchased from Anna arrived today (box 1 of 2 so far):



*posted by Victor Franco at 10:46 PM* 0 COMMENTS

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SATURDAY, DECEMBER 03, 2005

## **Finished Prepping Router Table, Glued First Skirt Rib**

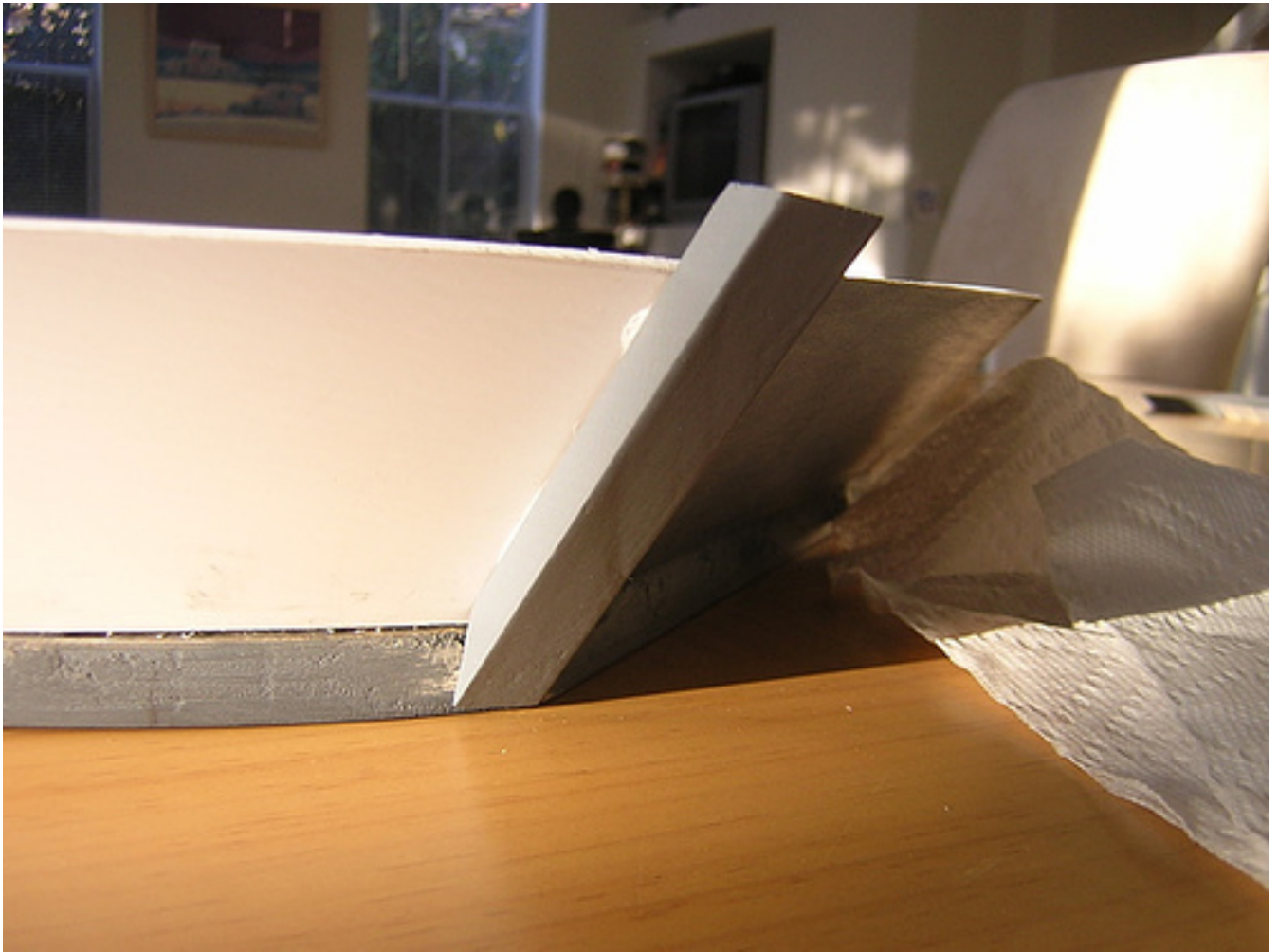
Between applying coats of primer to the legs, I finished my router adapter plate for the router table, and set up the router table to be able to trim the overhang of the skirt ribs:





Next I glued the first skirt rib for a test run of a trim with the router, which I will do tomorrow. The idea is to turn the skirt upside down, and let the spinning router bit trim the overhang of the rib, flush with the top of the upside down skirt (technique courtesy of Mike Senna).





*posted by Victor Franco at 10:40 PM* [0 COMMENTS](#)

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SUNDAY, DECEMBER 04, 2005

## Started Gluing Skirt Ribs

I started gluing the skirt ribs onto the curved styrene part of the skirt today. I also tried routing the ribs down to size (on the other side of the skirt in the photo below), but I ended up mangling a few of the ribs due to poor feeding into the router, and the fact I didn't let the glue dry long enough. So I'll let these dry for a day (or a week, or whenever I have enough daylight to use the router again) and try again.



*posted by Victor Franco at 6:31 PM* 0 COMMENTS

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SATURDAY, DECEMBER 10, 2005

## **Finished Main Skirt Build, Routed Frame**

I finally finished the main skirt work. All that remains is a bit of filling in of small gaps here and there, and painting the thing.

This would be a pretty misleading weblog if I just showed the stuff that went right, because lots of things go wrong (seemingly more often than not). Remember those wooden dowels I used for the ribs? Well, routing them down with the router table didn't always go so well. These ribs below were literally ripped from the skirt as I tried to route them:

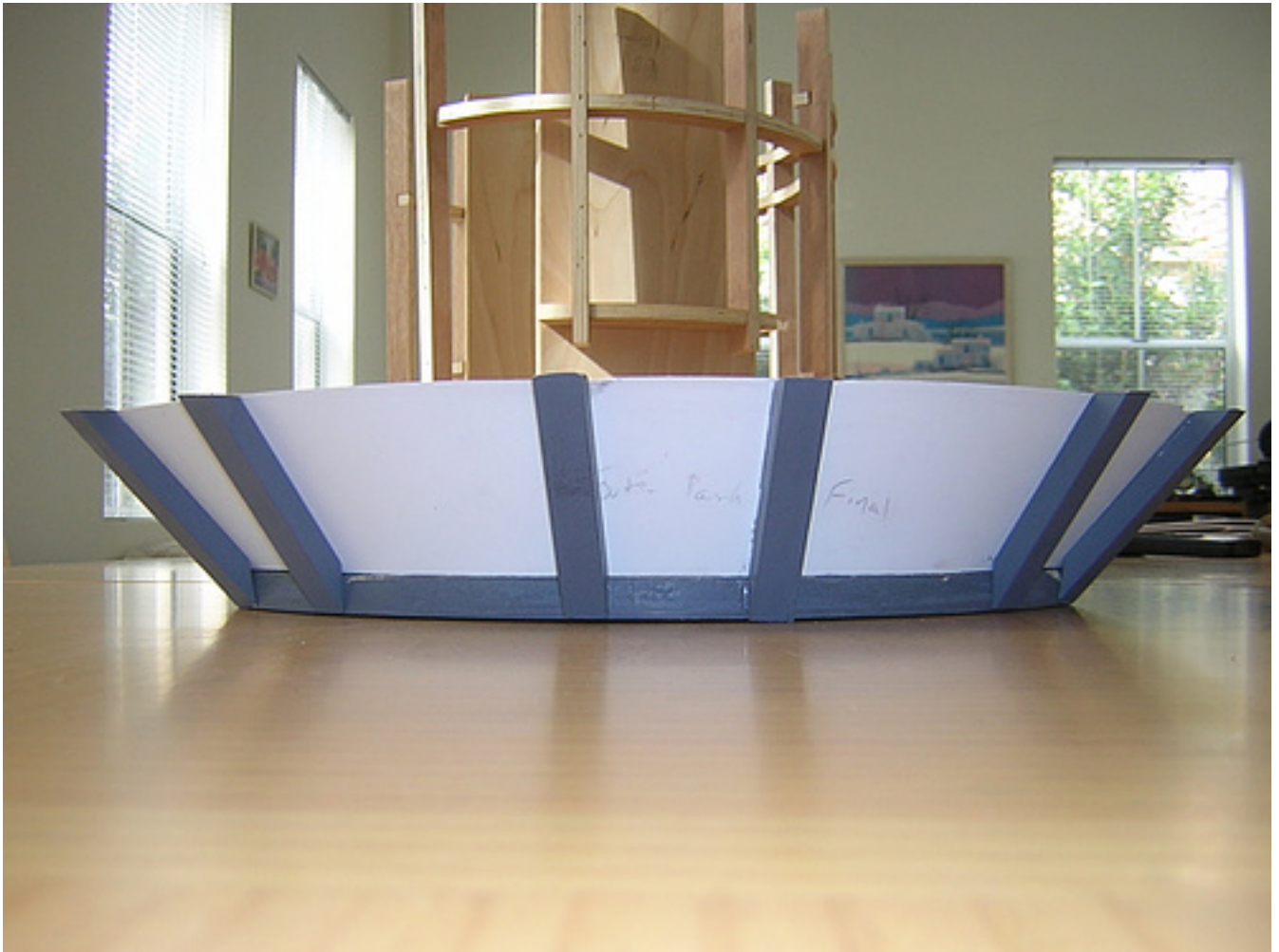


So I remade a few ribs, and for those that were already glued on, I cut them down with a hacksaw (which lead to sloppy results). The ribs that came off were remade and cut to size before gluing.





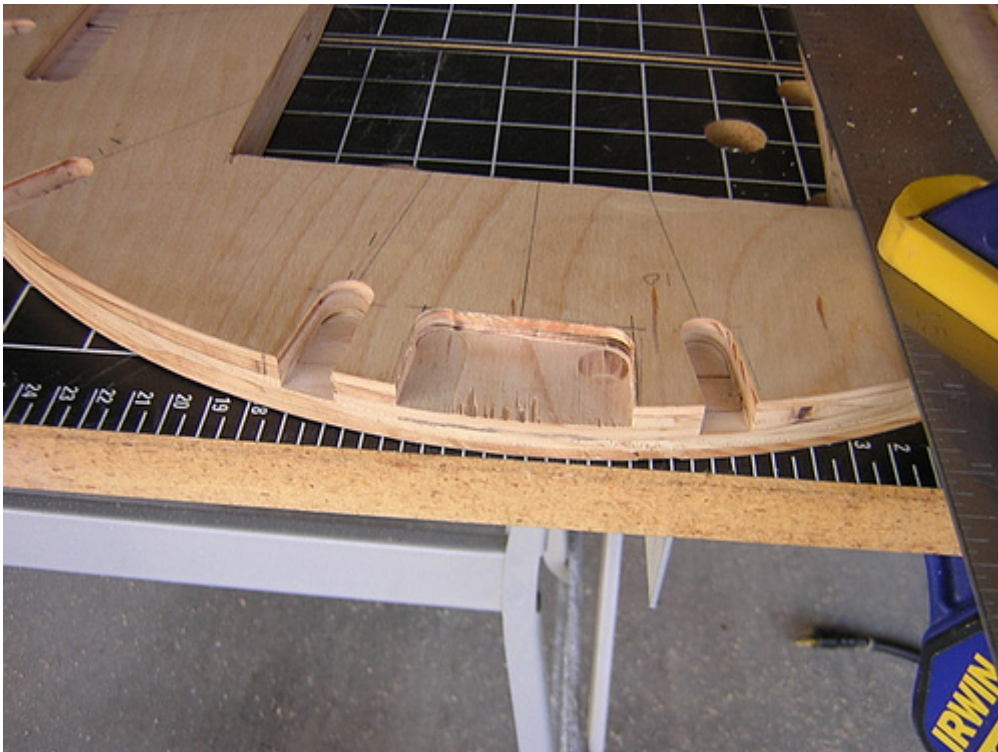
Here's how the skirt turned out. I may one day redo the styrene and the ribs, but for now, this will do. (That's my upside-down frame in the background, for reasons that are about to become clear.)



Next I returned to my long-neglected frame. Now that I have the resin power couplings and octagon ports, I am able to mark up areas of the frame that need to be routed out to accommodate these parts. So I turned the frame upside-down and pulled off the still-loose base plate and started marking away:



Then I routed the marked areas. Below is the area for the center-front power-coupling:



I did several test fits of the resin parts as I went, adjusting the depth of the router

bit and area being routed as necessary. Here's the final fitting:



*posted by Victor Franco at 9:06 PM* [0 COMMENTS](#)

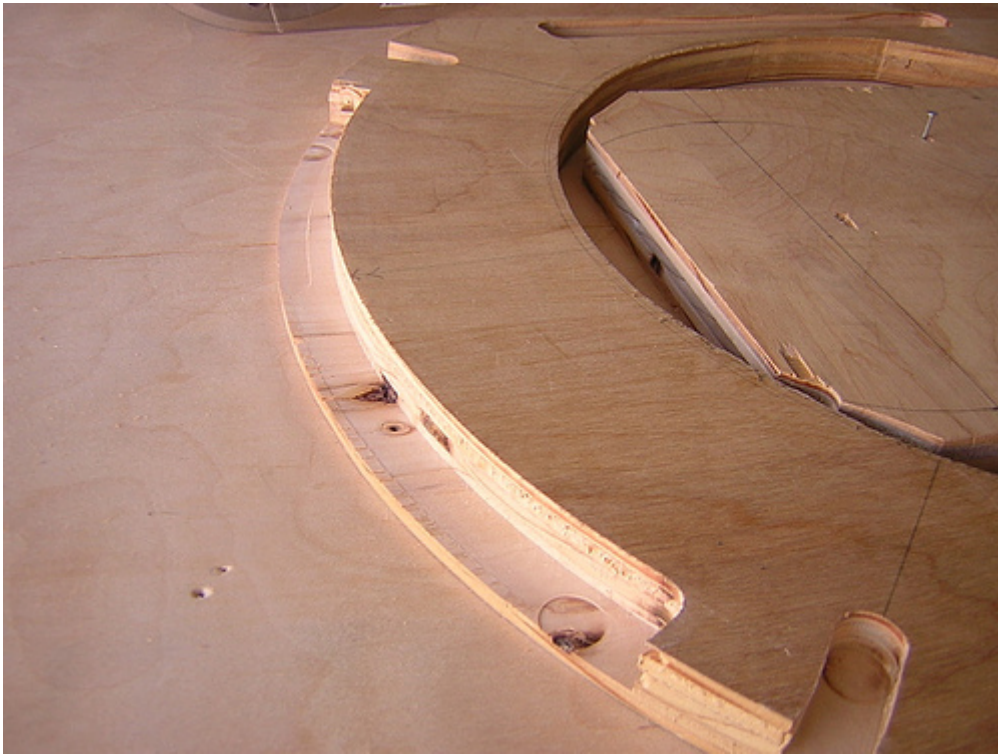
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SUNDAY, DECEMBER 11, 2005

## **Routed LDP Area, Sanded Resin, Started Cutting Skins**

I routed out the area of the frame that contains the Large Data Port (LDP), and did a test-fit:

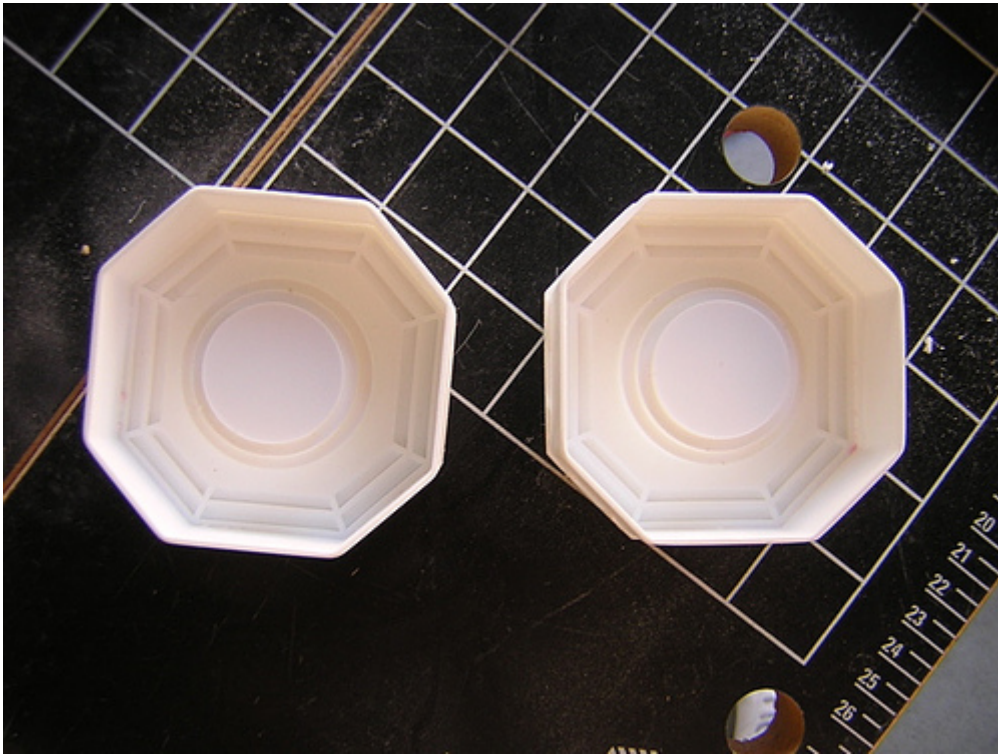




While I was working on the frame I also trimmed a couple of ribs and the shoulder planks (no pictures posted for this), to better accommodate the octagon ports.

Speaking of the octagon ports, I flipped the belt sander upside-down, secured it, and went to work sanding away. I figured resin dust is probably not a good thing to breath, so I wore a mask along with the goggles and ear protection. I sanded them down to the point that there was only about 1/16" extra overhang. I may hand-sand the rest, or I may leave them as-is. I haven't decided. See [More Resin Parts](#) for a "before" look.





Finally, I started cutting out parts of the aluminum skins with a hacksaw blade. Still much more to do, I've only gotten started.

*posted by Victor Franco at 9:56 PM* 0 COMMENTS

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MONDAY, DECEMBER 12, 2005

## Finished Cutting Skins

I finished cutting the skins tonight:





Earlier in the evening I picked up lots of paint and primer for the skins.

*posted by Victor Franco at 11:57 PM* [0 COMMENTS](#)

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WEDNESDAY, DECEMBER 14, 2005

## Filed Down Skins

One of the tedious parts of working with the aluminum skins is the filing down all the tabs that hold the various panels in place. I counted a total of 76 unique pieces in my set of aluminum skins, once all the pieces had been separated and filed smooth where needed. Still, I love the aluminum skins! They are now ready for priming and painting. (No picture, too boring.)

*posted by Victor Franco at 11:02 PM* [0 COMMENTS](#)

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SATURDAY, DECEMBER 17, 2005

## Frame Glued Up(!), Started Skin Attachment

Mike Senna was kind enough to let me come by again, so I could receive much needed guidance and assistance on the big frame glue-up, and the start of the skin attachment.

We both worked the glue bottles and got the frame glued up lickety-split. I thought this would be an iterative process, using clamps and grips to hold parts

of the frame together. Instead, we just worked through the entire frame in one shot, glueing up pretty much everything except the tall wooden shoulder planks, and the pie wedges that help hold them in place. (The shoulder planks will be glued after the shoulder hole has been cut, the pie wedges won't even be glued at all, believe it or not.)

After gluing, we used some of that really strong tape with the threads in it, and stuck it at the top-, middle-, and bottom-side areas of the skins on each side, and stretched the skins as tight as possible around the frame. We pretty much got a perfect fit, and we let the glue set for a couple of hours.



Next, we ensured the alignment of the skins to the frame was as good as possible, and then Mike showed me how to drill and countersink the holes for the screws that attach the skins. Only two holes on the front inner skin so far, but that's enough to get me started.



If that wasn't enough good R2 news for the day, Dave Everett's center internal vents arrived today too.



I'm on vacation until the New Year, so I'd like to get the skins all attached and painted, and the legs attached as well before vacation ends. Here's hoping, anyway.

*posted by Victor Franco at 11:31 PM* 0 COMMENTS

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WEDNESDAY, DECEMBER 21, 2005

## Drilled Inner Skins

I finished drilling and countersinking the inner skins tonight, for the screws that will attach them to the frame. Next up, drilling the outer skins, which will require great care, since these will show to the outside world.



*posted by Victor Franco at 11:57 PM* 0 COMMENTS

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FRIDAY, DECEMBER 23, 2005

## Frame, Skin and Resin Work

Today was a fairly busy and productive day.

I started out by routing off the tiny amount of the top of the frame that I had left above the area of the large data port. I thought I could/should leave it there, but I was wrong, so bye-bye it went. Here's the "after" picture:

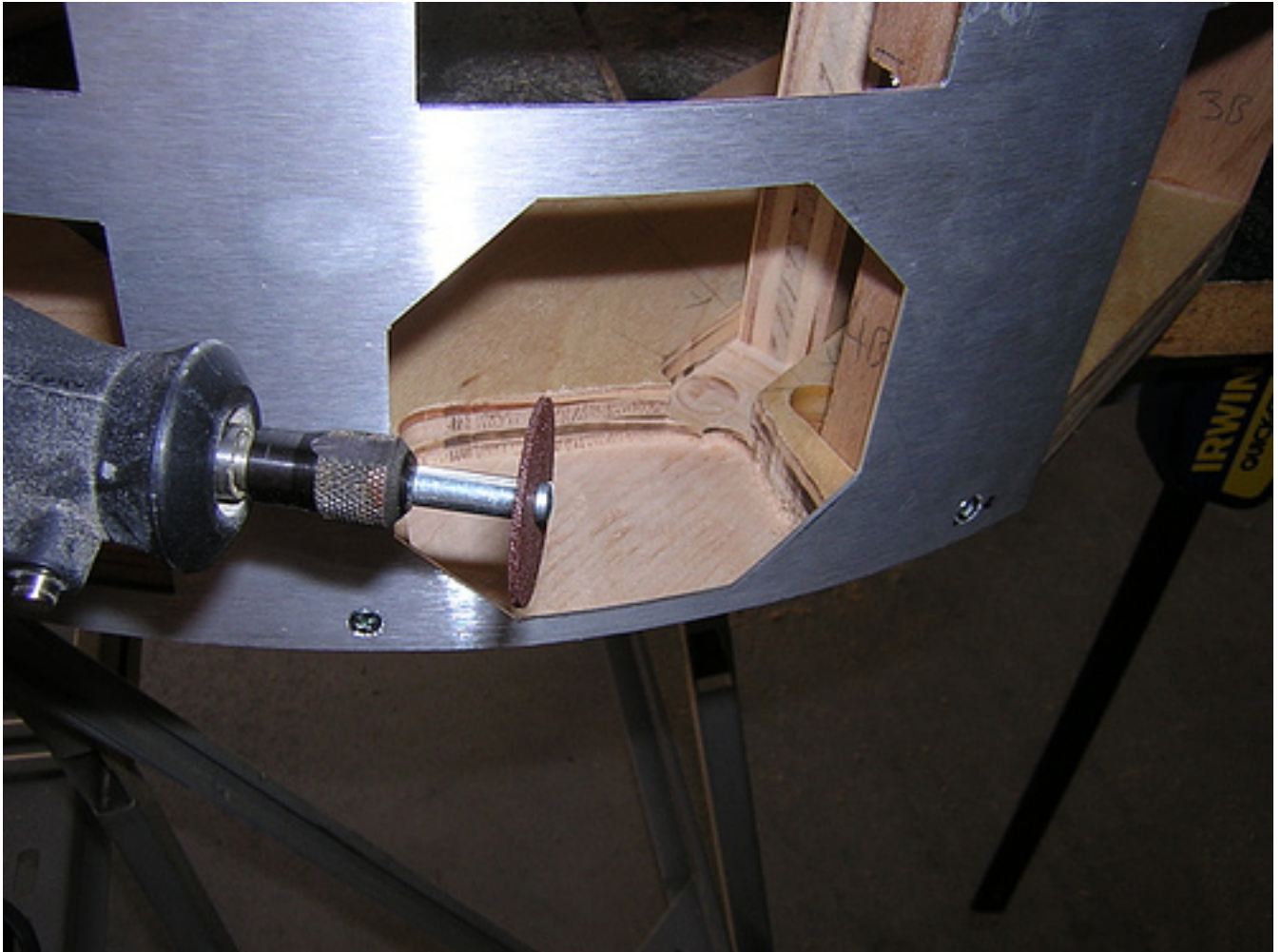


The next thing I needed to do was enlarge the slot that I cut into the bottom of the shoulder planks to make room for the octagon ports (both front and back). I didn't leave enough room, which was bad, because now the frame is all glued up, and I had to use a hacksaw blade by hand to make this cut. Very tedious.



After that, on Mike Senna's advice I decided to widen the inner skins' octagon ports with a Dremel and the cutoff wheel attachment. This way, the octagon ports will sit flush against the outer skins, instead of the inner skins. You can see the "after" results in the background of one of the pictures below. Here's a "before" look:

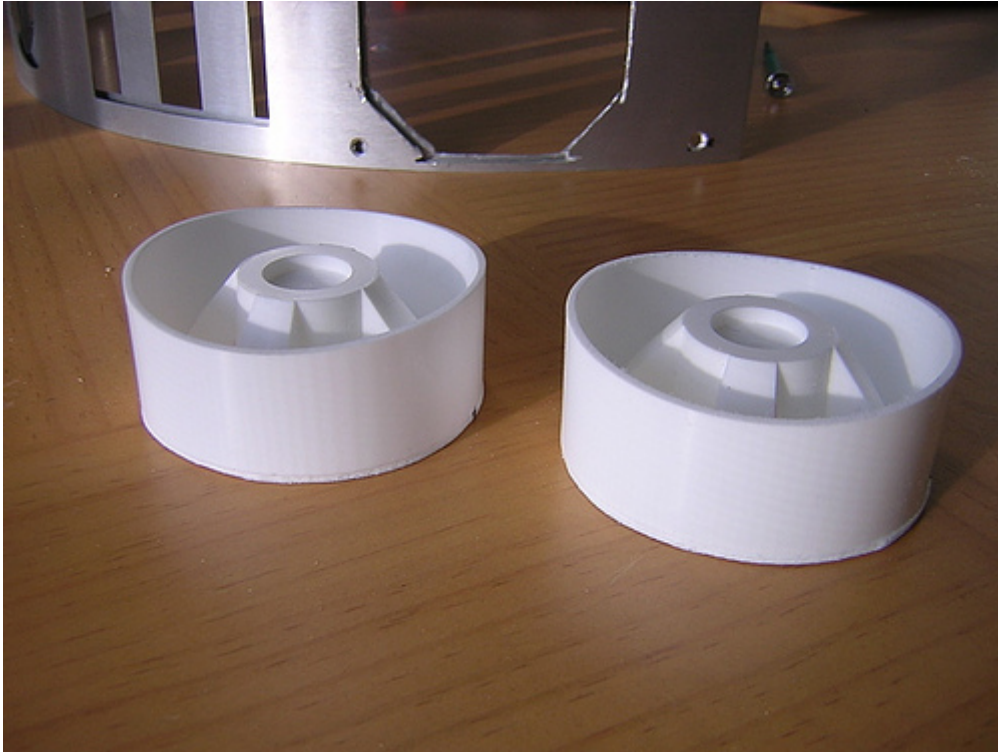




Again on Mike's advice, I painted selected areas of the frame black. These areas might be seen from the outside. For example, if/when the utility arms open, that area will be dark. If I choose to sand and cut the octagon ports so that the ribbing on the back is cut like a web with openings, the background there too will be dark.



Next I sanded the resin power couplings using a piece of sandpaper face up, taped to a curved piece of one of the aluminum skin cutouts that maintains the overall radius of the skin curvature. I sanded the face of the power coupling against this curve, so that the power coupling will rest flush with the inside of the skins. Here's an "after" look:



Finally, I cut out and glued together the top of the door frame for the back panel. It ended up being a little thicker than I intended, but it should be okay. I can always route it down if need be. I haven't decided if I should make side door frame strips, or just hold the door on with brackets and screws.





*posted by Victor Franco at 10:35 PM* 0 COMMENTS

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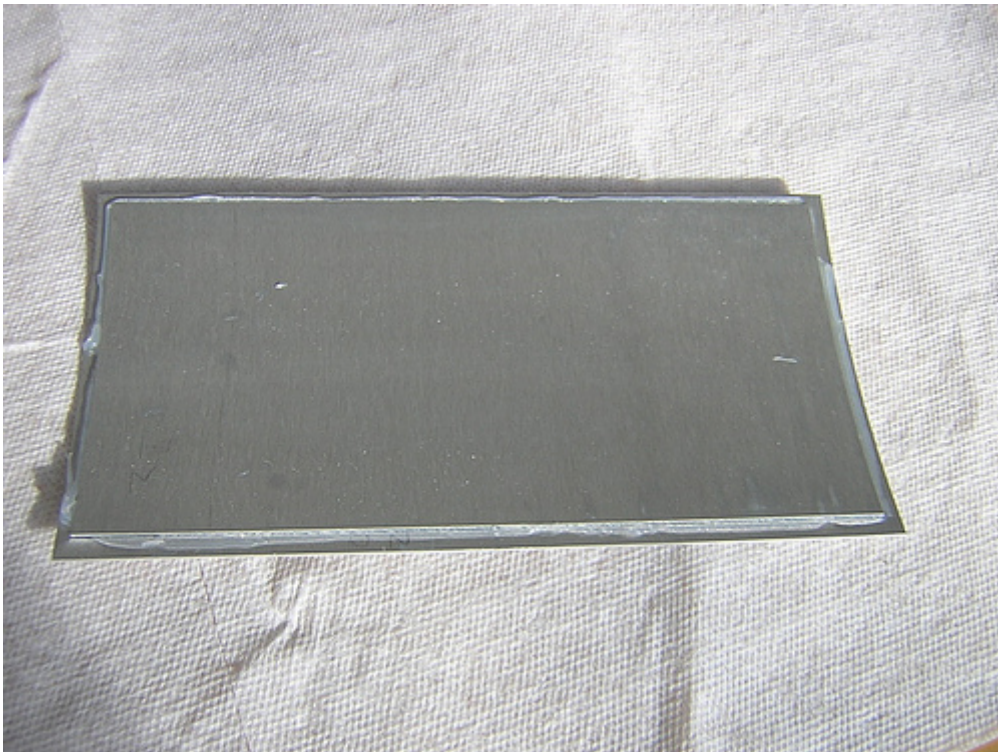
MONDAY, DECEMBER 26, 2005

## **Siliconed Panels, White Paint Test**

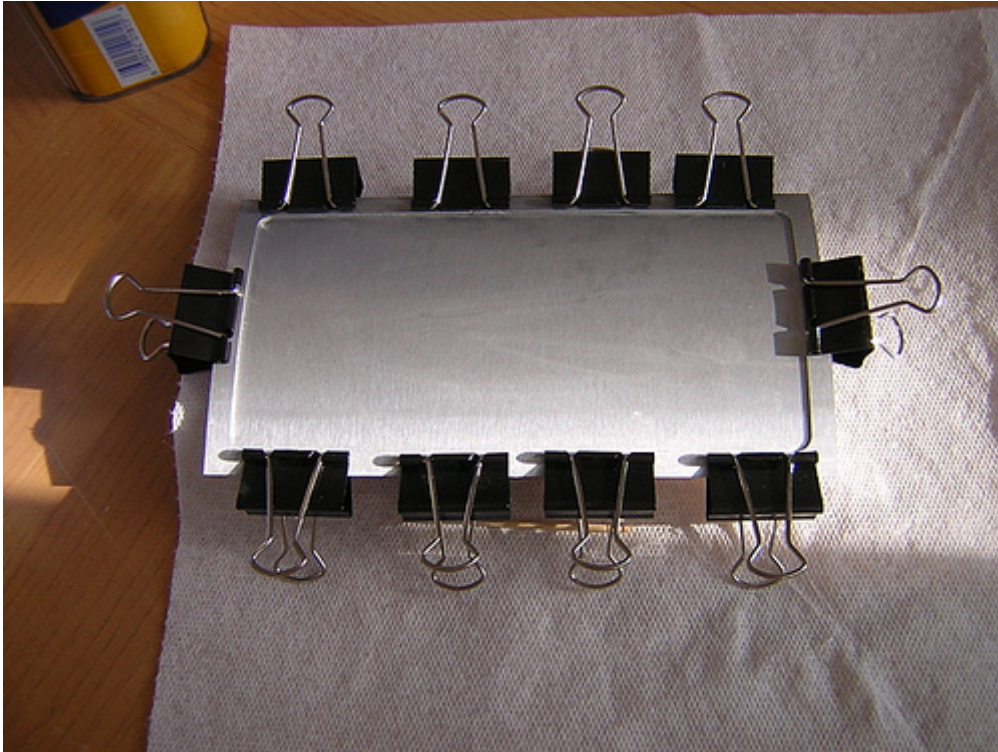
Yesterday I just about finished drilling and countersinking the outer skins:



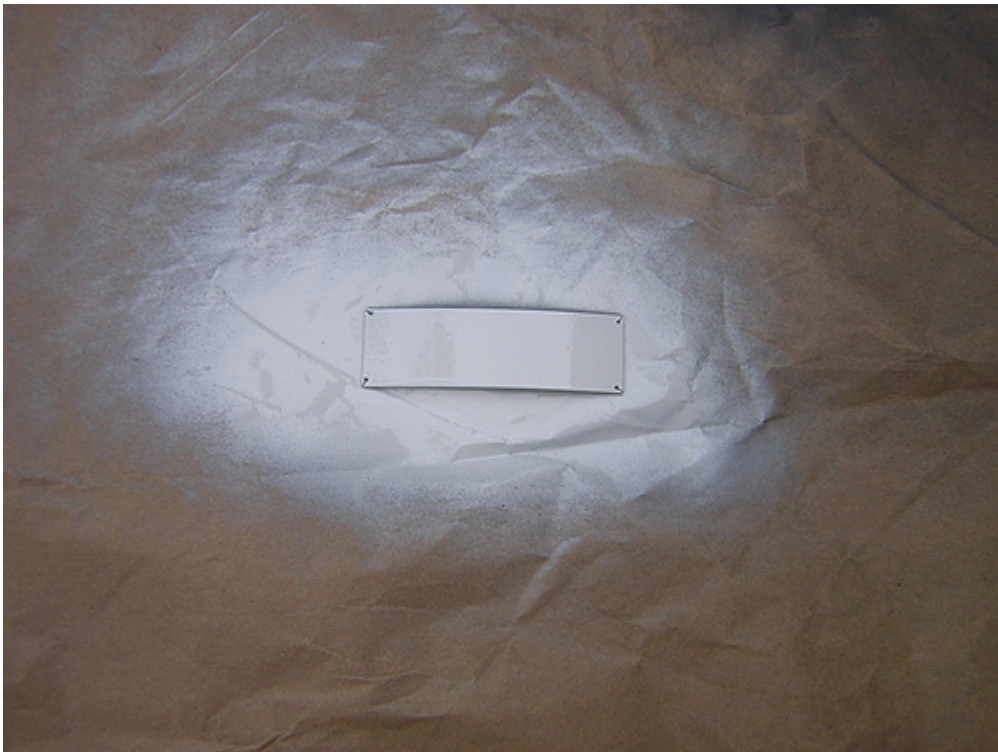
Today I started applying silicone to glue panel outlines of the outer skins to the panel cutouts of the inner skins. Don't worry, I cleaned up the mess.







I wrapped up by doing a paint test of Rustoleum Satin White on a scrap piece of aluminum from the skins. I applied two coats of primer first, followed by three coats of Satin White.





*posted by Victor Franco at 10:57 PM* 0 COMMENTS

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TUESDAY, DECEMBER 27, 2005

## Dremeled and Drilled Frame

I started off the day by repeating some of the silicone exercise from yesterday for a pair of panels on the rear skins (the panels not included as part of the back door).

Next, I Dremeled out a few areas of the frame, specifically the rib supporting bottom of the coin slots (shown here), the rib above the front power coupling (not visible from this angle), and the area above the shoulder (seen in the next picture).



Finally, I made one of the cuts I had been putting off for as long as possible, due to my fear of messing it up. This was the drilling of the holes in the shoulder

planks that the gas pipe connecting the two legs passes through. As far as I can tell, the holes line up just fine, but I won't know for sure until I connect the legs. The gas pipe needs to be cut down a bit too. The other hole that's visible is for electrical wires to pass through the shoulder and on down the legs to the feet.



By the way, yesterday's white paint test didn't turn out as robust as I had hoped. I was able to peel the paint and primer off the aluminum fairly easily with my finger nail. The paint did not come off the primer; rather, the primer and paint came off together from the aluminum. I did not prep the aluminum other than cleaning it with acetone. I hope to try a couple of experiments tomorrow, one with a different primer, the other with a light sanding and cleaning of the aluminum before applying the same primer as yesterday. We'll see how that goes...

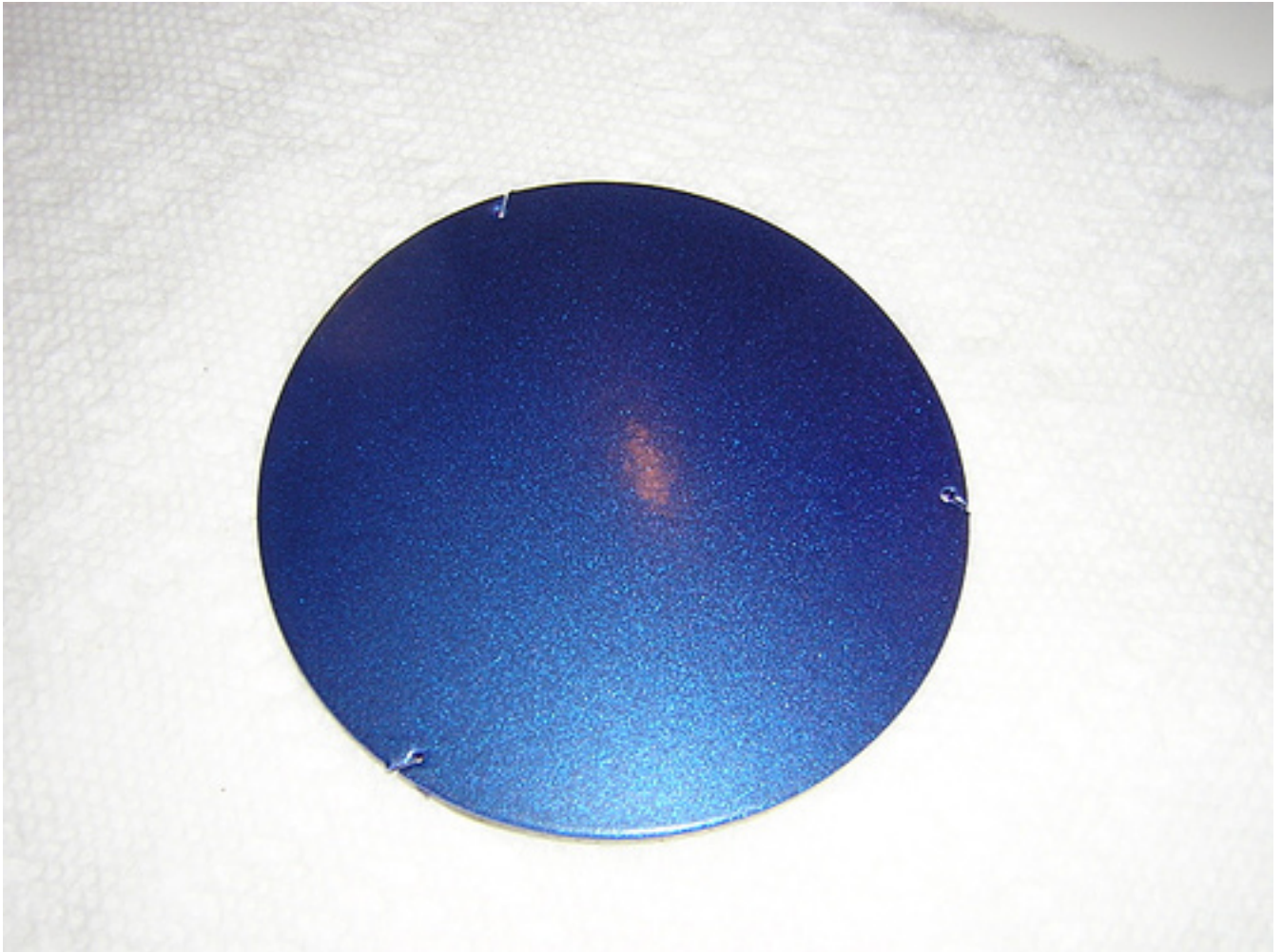
*posted by Victor Franco at 11:21 PM* 0 COMMENTS

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WEDNESDAY, DECEMBER 28, 2005

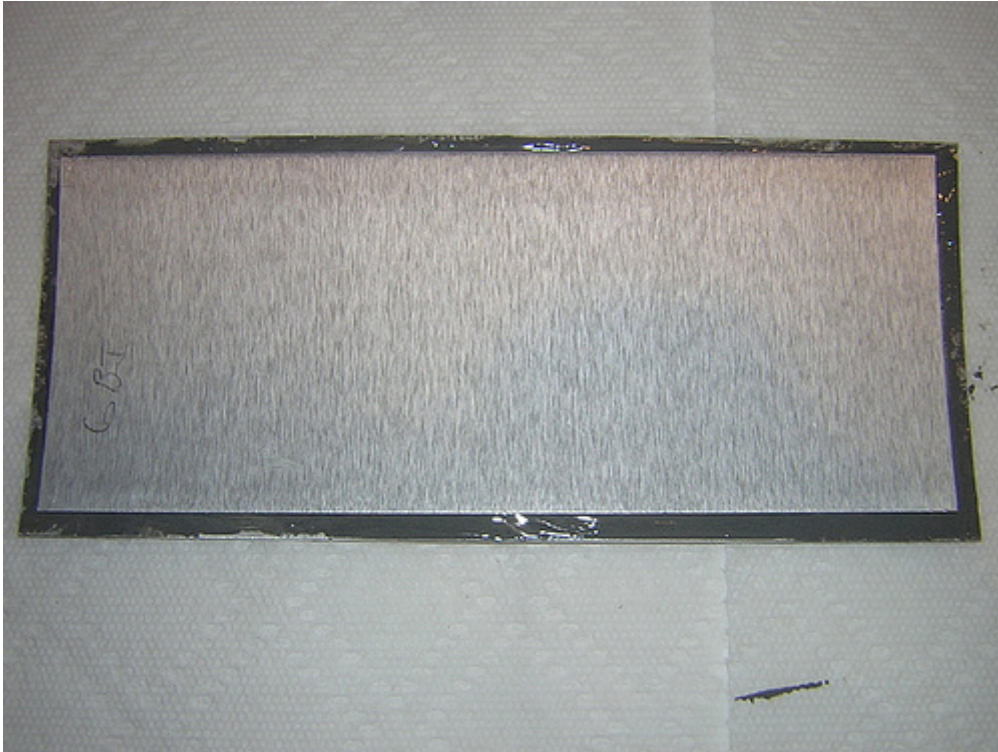
## Paint Tests, JB Welded & Cut Styrene

I tried a couple of paint tests, of both R2 blue and white. For blue, I used Kelly Krider's famous formula (primer, Rustoleum Metallic Purple, DupliColor Anodized Blue, and Rustoleum Crystal Clear clearcoat, in that order). For white, I used the Rustoleum primer instead of the Brite Touch, and Rustoleum Satin White (same as earlier). I need to wait for both to dry to assess the results.

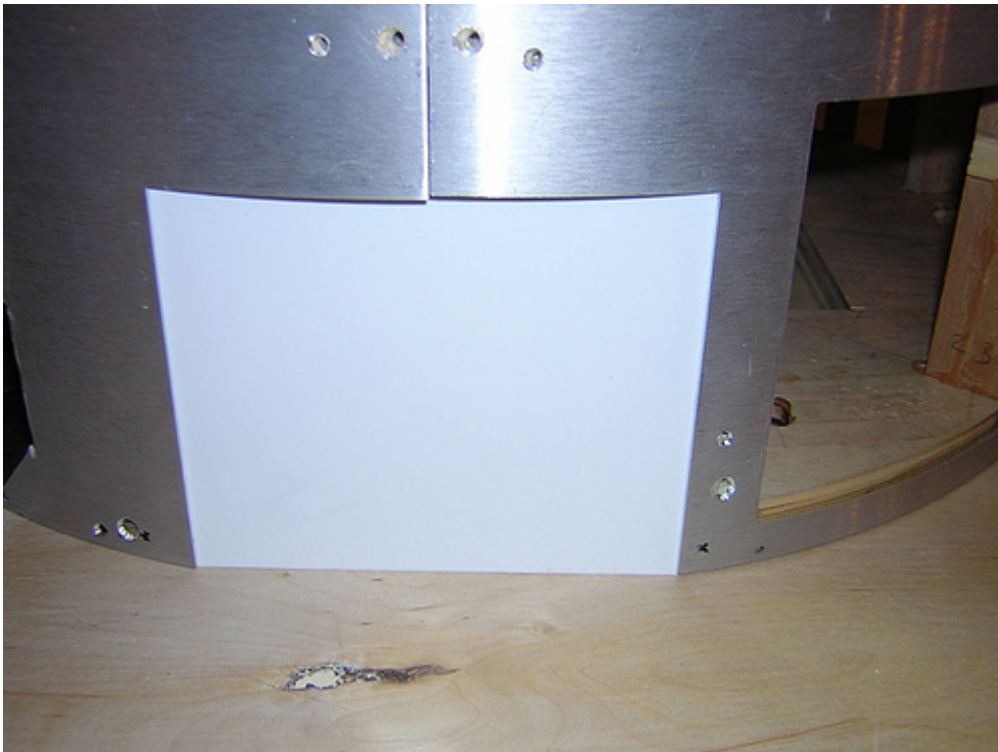


Next I had my first experience with JB Weld, even though I bought the stuff way back on [May 29, 2005](#). I JB Welded one of the back door panels to its outline. I'm only JB Welding the back door parts, to allow for potential autographs on the inside of the back door.





At the end of the day I cut out some styrene to cover the exposed areas of the frame, on the right and left-bottom sides.



I also made a couple of trips to Home Depot and a trip to Rockler to pick up various parts (screws, rails for the center leg, casters for the center foot).

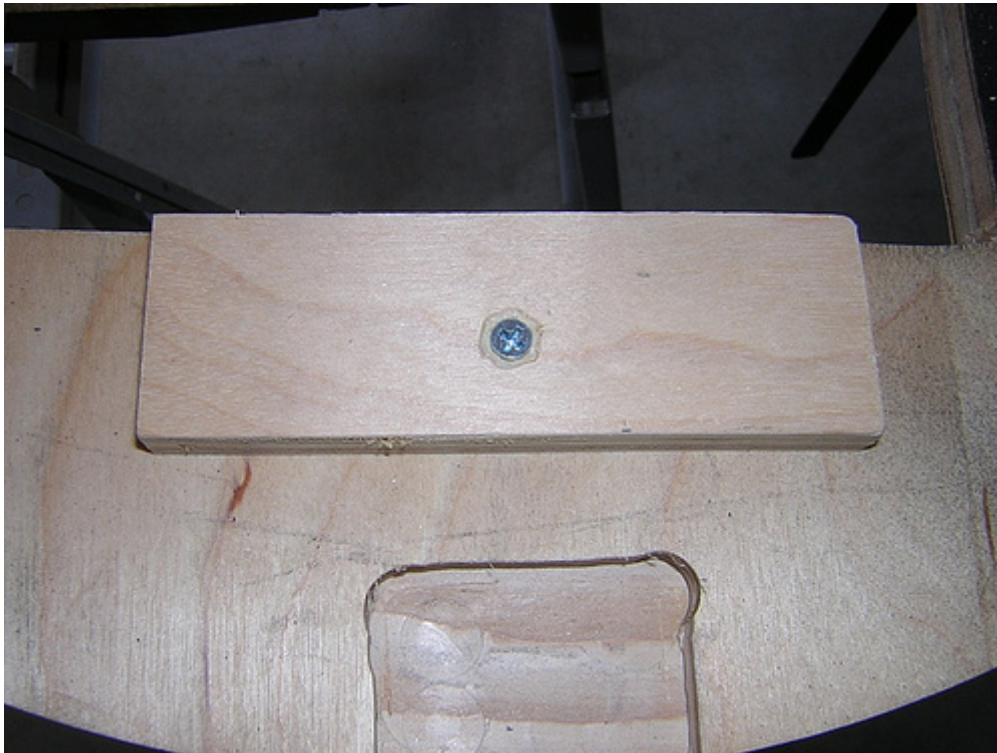
*posted by Victor Franco at 11:47 PM* [0 COMMENTS](#)

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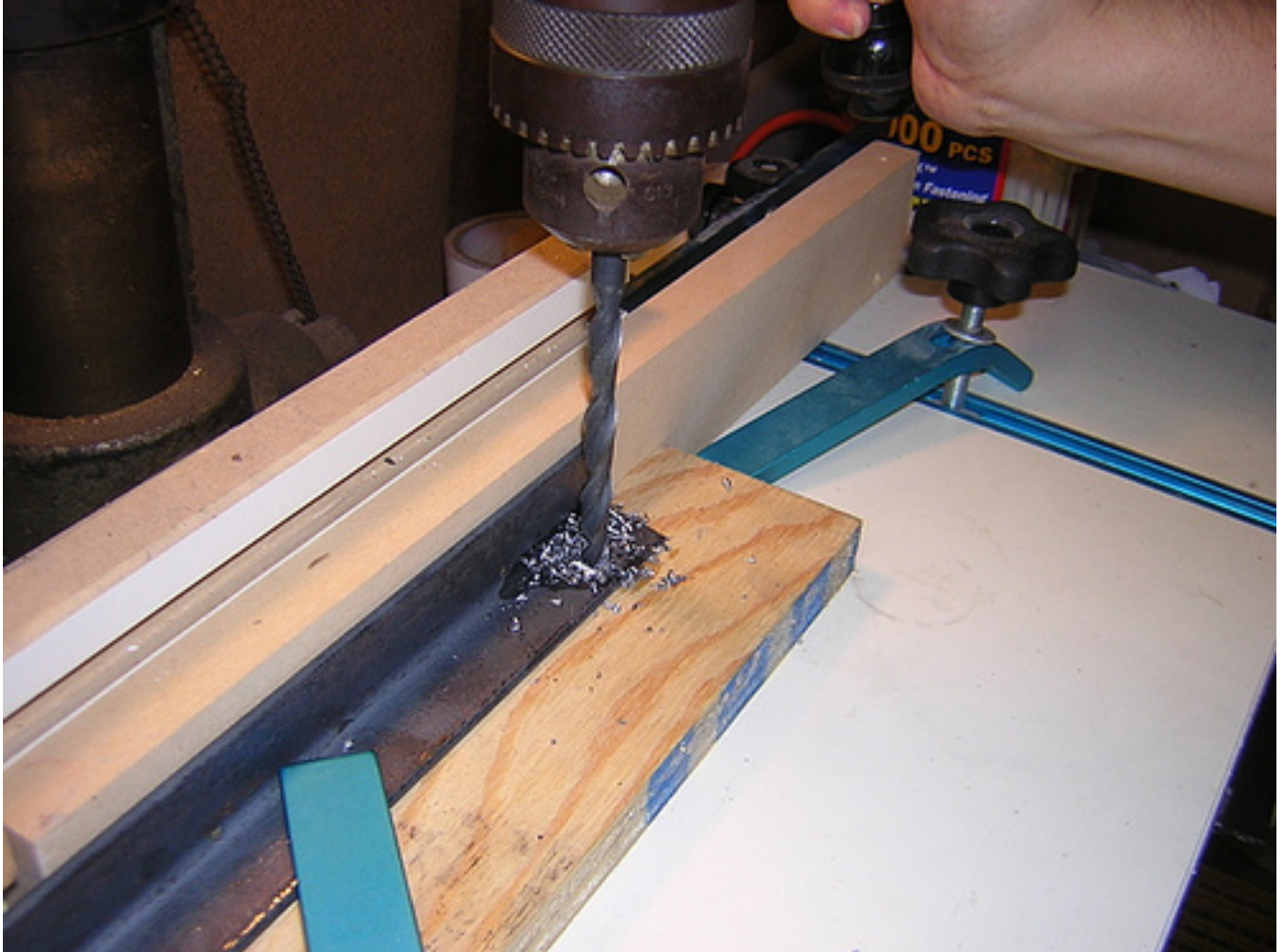
THURSDAY, DECEMBER 29, 2005

## Center Leg Rails Started, More JB Welding

Another busy day. First I cut and secured the supports for the center leg rails.



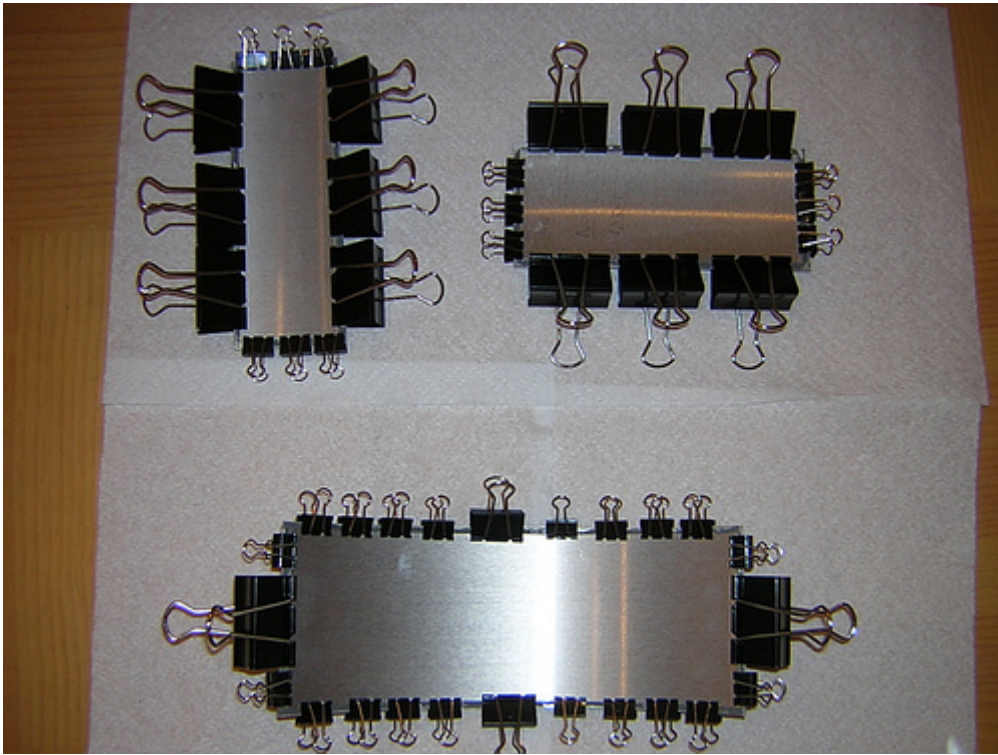
Next I cut the rails themselves with a hacksaw (a laborious process to be sure). Then over to Kelvin's to use the drill press to drill the mounting holes into the rails.



Back home, I received the U-bolts and wheel axle bushings that I ordered from McMaster Carr, and Heath's aluminum foot strips arrived. Yea!

I wrapped up by JB Welding the rest of the back panel outlines to their corresponding panels. This was TED-I-OUS and kinda messy. Also ran another white paint test.





*posted by Victor Franco at 6:39 PM* 0 COMMENTS

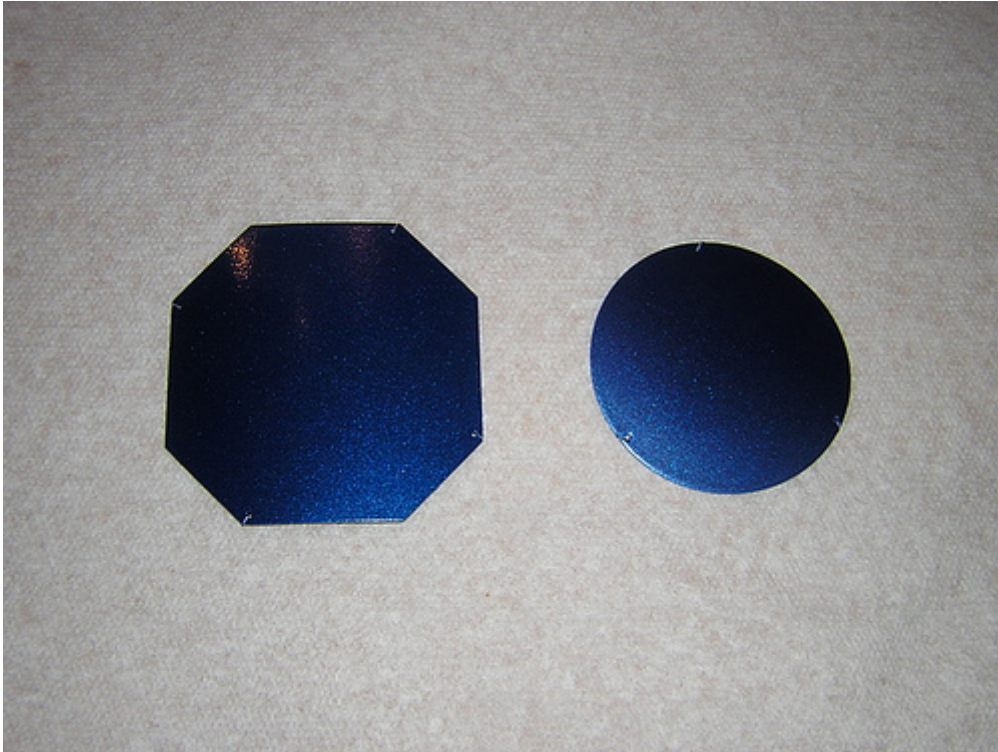
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FRIDAY, DECEMBER 30, 2005

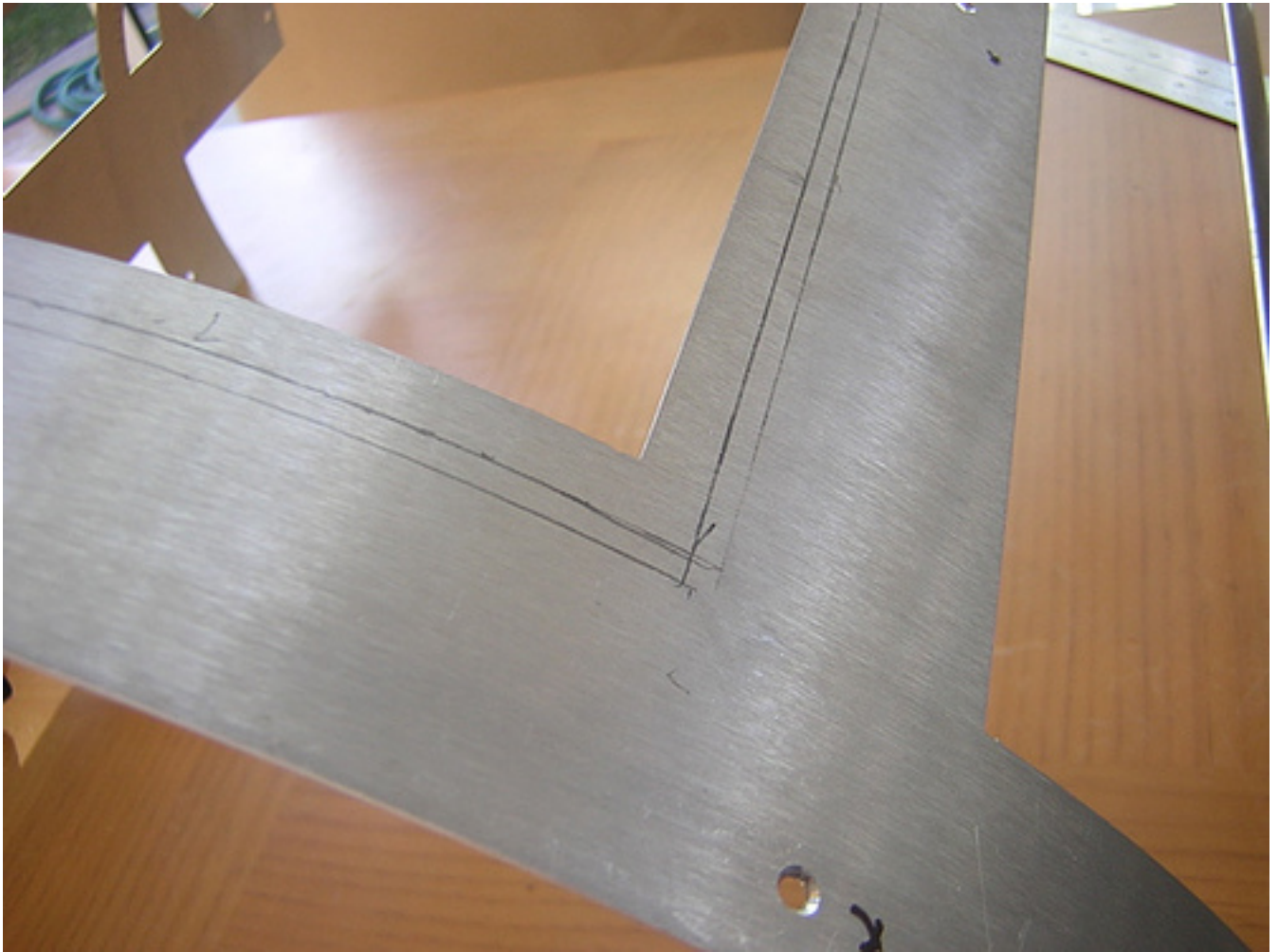
## Paint Test, Marked Rear Panel

Wow, I got almost nothing done today. Huh, how about that?

I did another blue paint test, this time by first sanding the scrap piece of aluminum, then two coats of Brite Touch Primer, followed by the Krider blue formula (except three clearcoats instead of four). The picture below shows today's test (left) vs. the one I did the other day (right). I know, they pretty much look the same, so why bother posting this picture?



I also marked up the rear inner skin for the back-panel cutout. I may attempt that tomorrow, we'll see...



*posted by Victor Franco at 7:13 PM* 0 COMMENTS

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SATURDAY, DECEMBER 31, 2005

## **New Year's Eve Silliness**

I did no building today, but I decided to put together most of my junk and dress R2 up for New Year's Eve.

Happy New Year!





*posted by Victor Franco at 9:48 PM* 0 COMMENTS

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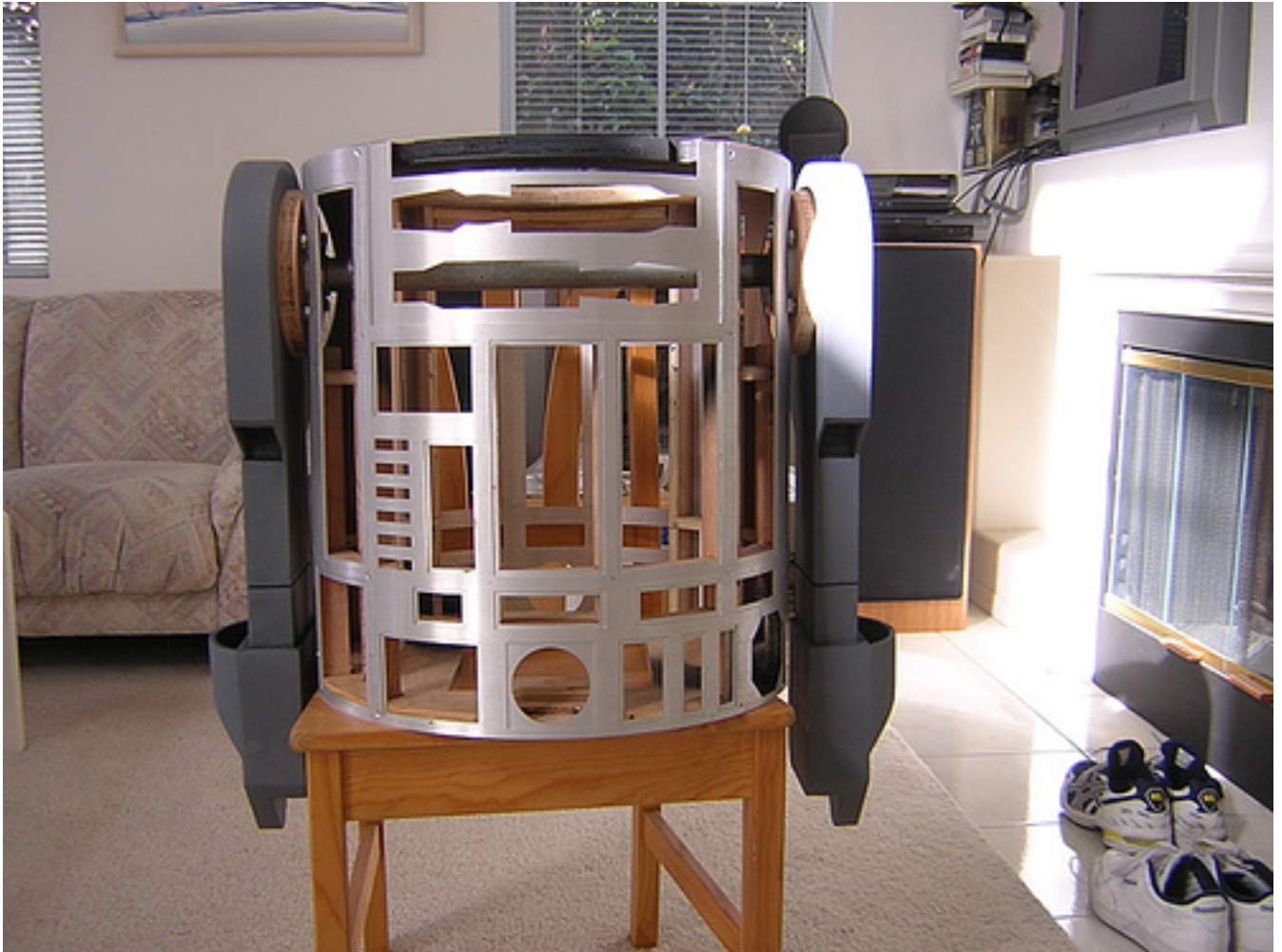
SUNDAY, JANUARY 01, 2006

## **Cut Gas Pipe, Dremeled Back Panel**

I started off today by cutting the gas pipe that connects the legs to size, using a jigsaw and a really nasty blade.



Then I gave the legs a test fit, which seemed to indicate success.



Next I marked up the center leg rails for drilling, but until I can get access to a drill press, I'll hold off on those.

Finally, I Dremeled out the back door panel of the inner skin. Frankly, I was surprised how straight I cut the skins here.







I sanded the sharp edges down afterward.

Well, vacation is over, and I didn't get as far as I had hoped, but I guess I'm not too surprised. I'll get this droid on three legs sometime soon.

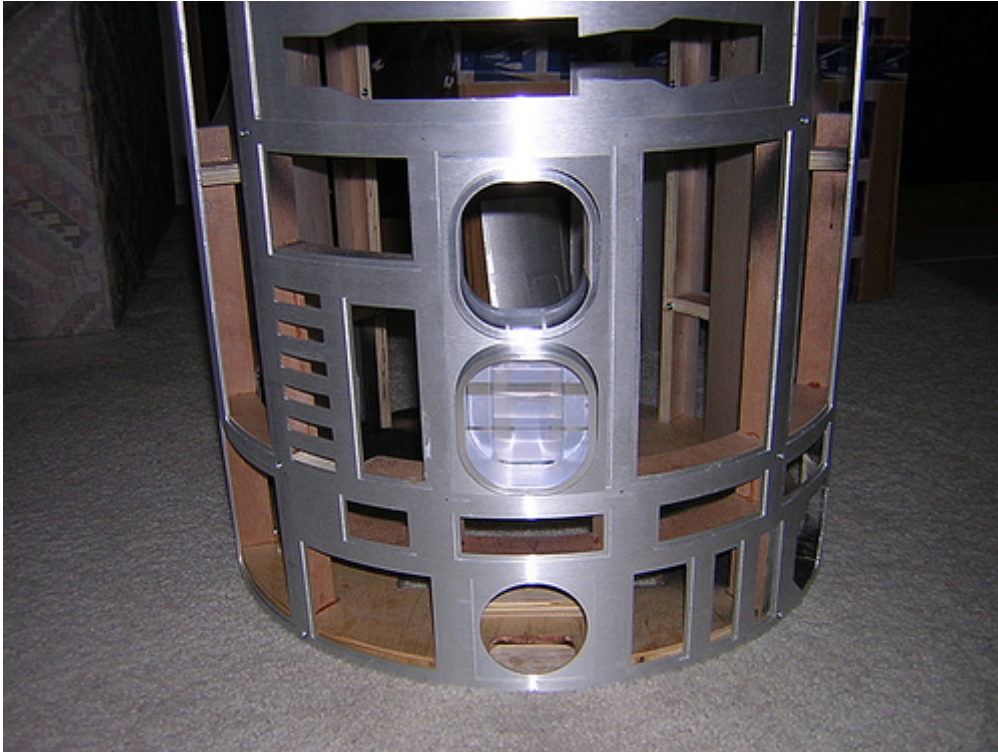
*posted by Victor Franco at 10:39 PM* 0 COMMENTS

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TUESDAY, JANUARY 03, 2006

## Vent Surrounds Arrive

Wayne's aluminum vent surrounds arrived today, and they look and fit great! I Scotch taped Dave's lower vent inserts in for show, but I don't have the upper vent inserts installed.



I won't be able to do any building for the next few days, but hopefully I'll have something to report during the weekend.

*posted by Victor Franco at 4:16 PM* 0 COMMENTS

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FRIDAY, JANUARY 06, 2006

## Started Painting for Real, Glued Up Front Vents

Another mini-milestone, I started painting some of the white panels today (using BriteTouch light gray primer and Rustoleum Satin White). The unpainted panel with the blue tape is to remind me that I'm not painting that particular panel on the back door, as some shots in Episode IV have this panel unpainted.





Later I glued up the internal front vents (well-camouflaged aluminum on aluminum).



*posted by Victor Franco at 11:31 PM* 0 COMMENTS

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SATURDAY, JANUARY 07, 2006

## **Finished Center Leg Rail Drilling, Finished Front Vents**

I headed back over to Kelvin's to use the drill press, to finish drilling holes in the center leg rails, and the center leg itself. I was very happy with how it turned out. I did a loose-fit:





Later on I filed the upper front vent inserts a bit, and fitted the upper and lower vents into their respective surrounds. I guess I got a bit sloppy with the Super Glue. Oh well...





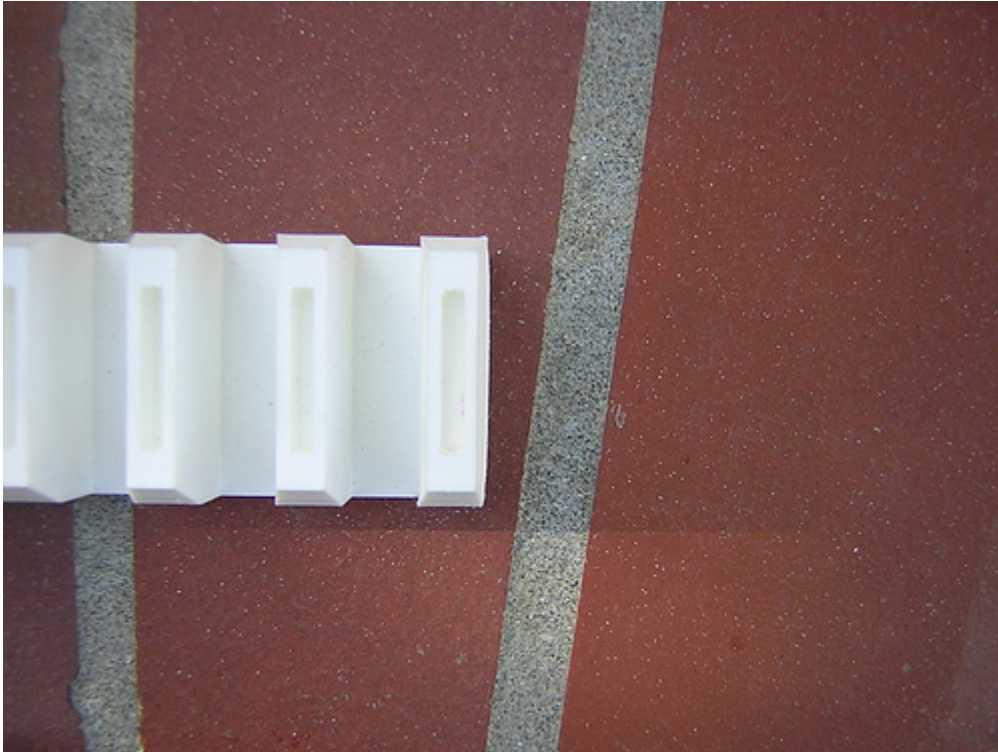
*posted by Victor Franco at 8:17 PM* 0 COMMENTS

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SUNDAY, JANUARY 08, 2006

## **Coin Slots Fitted, More White Panel Painting**

Due to the way I placed the horizontal rib immediately below the coin slots on my wooden frame, I needed to sand down the resin coin slot part, and Dremel out a bit more wood from the rib itself. After that, the part fit into the skins just fine.



I also finished painting the remaining cutout panels white. I still need to paint the rest of the outer skins.



*posted by Victor Franco at 10:14 PM* 0 COMMENTS

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TUESDAY, JANUARY 10, 2006

## **Finished Painting Skins**

I couldn't wait until the weekend, so I finished painting the skins tonight in the garage. There's never enough ventilation... who said that?!





*posted by Victor Franco at 10:26 PM* 0 COMMENTS

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WEDNESDAY, JANUARY 11, 2006

## Cut Shoulder Bolts Down, Replaced T-Nut

Today wasn't too exciting (unlike all the other days...). I used the angry jigsaw blade that cut the gas pipe, to trim down the various bolts that go on my shoulder wheel in order to make room for the shoulder hub that will one day encroach on the area. (See [Finished Drilling Shoulder Discs](#).) I also had to replace a loose t-nut in the shoulder. It took a while, but eventually I got the job done. No pictures today, too boring.

*posted by Victor Franco at 10:20 PM* 0 COMMENTS

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FRIDAY, JANUARY 13, 2006

## More Parts Arrive, More Painting

The rest of the budget feet parts and ankle bracelets that Anna sent arrived today, along with some bushings for the foot screws I purchased from McMaster Carr.



"Finished Painting Skins." Did I actually write that earlier? I should know better. I'm never finished with anything. Despite what I thought were enough coats the other day to cover the skins completely, I could see some aluminum (or primer) showing through, so I gave the skins another few coats of Rustoleum Satin White today. This mostly did the job, but I *still* can see some hints of metal color on a few spots. So yet more painting to come. In the meantime I set the front skins next to my frame.



*posted by Victor Franco at 11:45 PM* 0 COMMENTS

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SATURDAY, JANUARY 14, 2006

### **A Bit More Painting**

I got disappointingly little done today. I realized that I had forgotten about the smaller cutout pieces on the back door that need painting, so I prepped and painted them. I also sanded and applied a couple of more coats of the primer to the legs, still trying to get the last remnants of wood grain to disappear. Later I picked up some stuff from Home Depot (more paint & primer, silver tape, t-nuts, etc.) for various activities that will need doing as I move forward.

*posted by Victor Franco at 4:42 PM* 0 COMMENTS

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SUNDAY, JANUARY 15, 2006

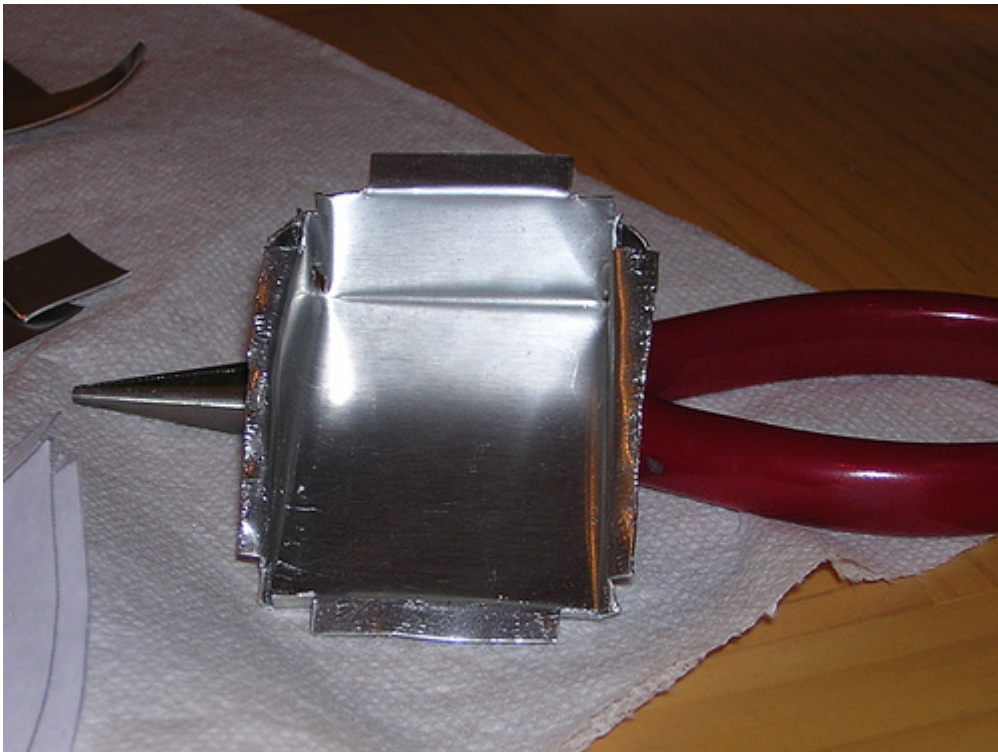
### **Finished Painting Skins (Really), Prototype Coin Return**

I finished painting my skins for real today this time, I don't see anything but white now.





I also took a shot at creating a coin return, but it didn't turn out so hot. So let's just call it a prototype. I think I need thinner aluminum. You get the good, the bad and the downright ugly here.



*posted by Victor Franco at 11:21 PM* 0 COMMENTS

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MONDAY, JANUARY 16, 2006

## Coin Returns Try #2

More incontrovertible proof that nothing's easy when it comes to building R2. I had another try at making a coin return, and this one turned out somewhat better than yesterday's attempt. I found some thinner aluminum at Ace Hardware. It was ducting, but the coin returns are small enough that the curve doesn't really come into effect. I'm just making the inset piece, not the frame so far.

By the way, these are built using Chris Lee's extremely helpful tutorial, [Making aluminum coin returns](#).

I have a feeling there are going to be several attempts to get them right. (It would probably help if I started working on them before 10:30pm too.)



*posted by Victor Franco at 11:36 PM* 0 COMMENTS

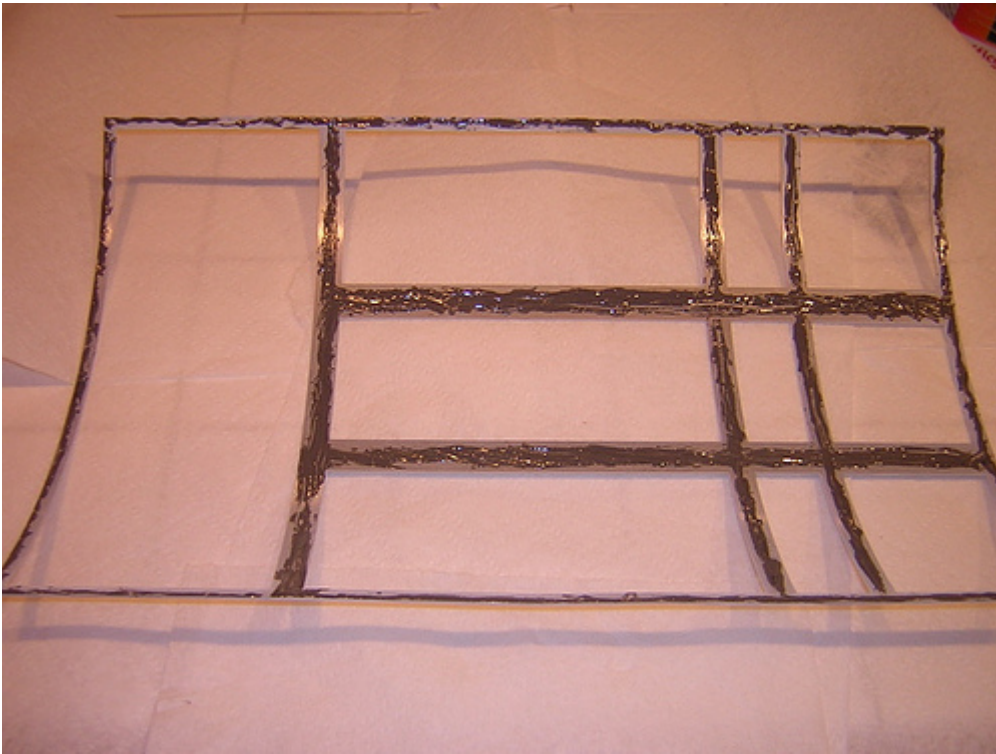
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TUESDAY, JANUARY 17, 2006

## Started JB Welding Back Door

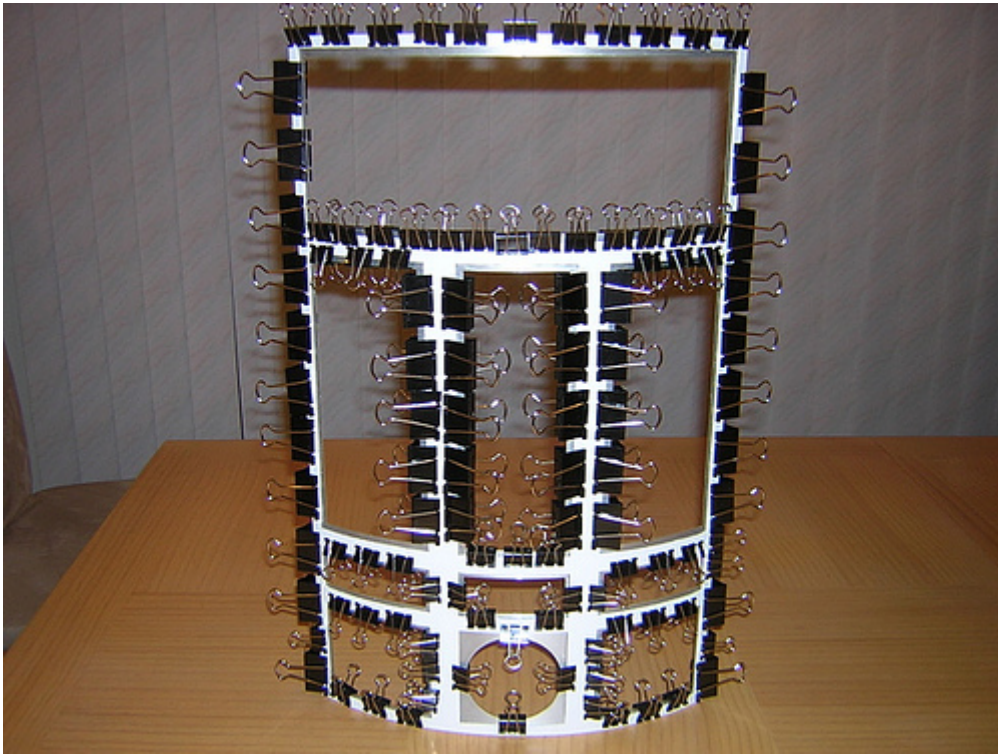
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A marathon 3 1/2 hour session of JB Welding the inner and outer skins that make up the back door. Most of the time was spent cleaning up JB Weld that would slowly ooze from the seams. What a pain that was.



Gee, I sure hope I used enough clamps... (117 by my count, beat that! If you do, it probably means you are insane.)





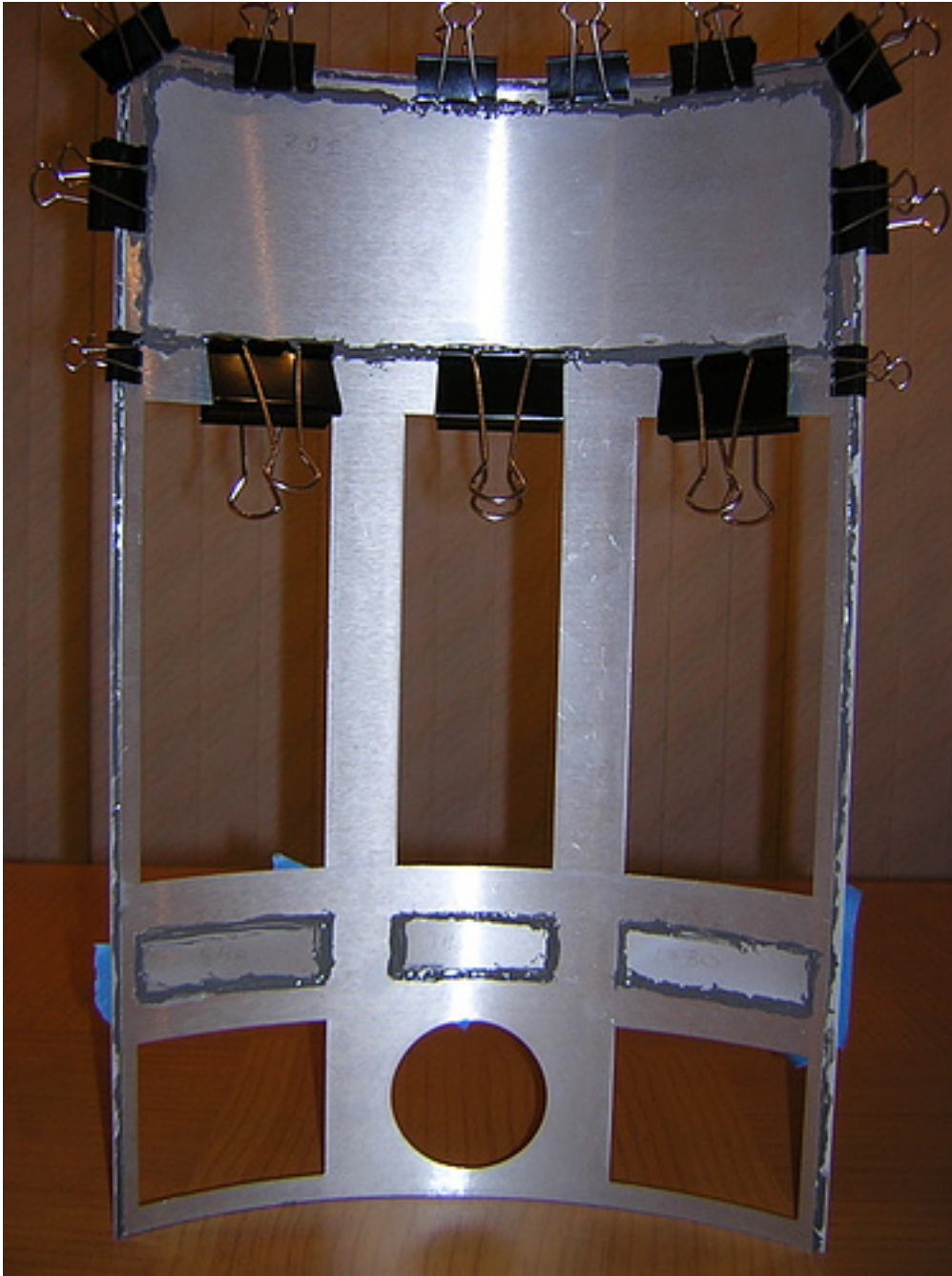
*posted by Victor Franco at 11:51 PM* 0 COMMENTS

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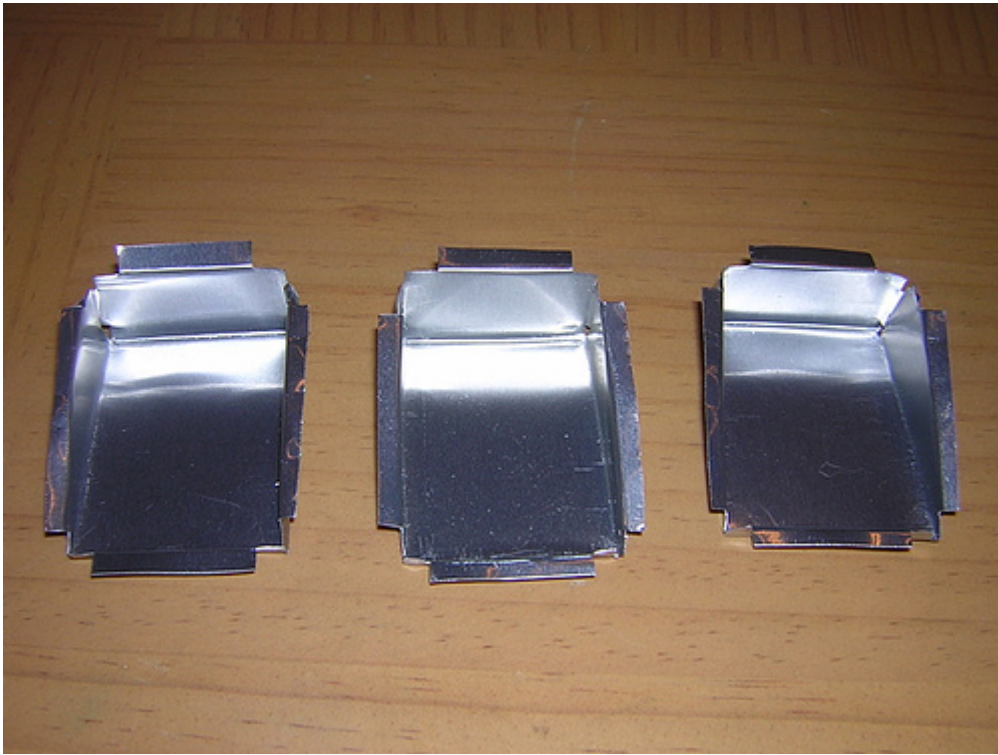
WEDNESDAY, JANUARY 18, 2006

## **More Back Door JB Welding, More Coin Returns**

I JB Welded four panels on the back door (the largest and three smallest). The top panel was held in with my little paper clip clamps since it is such a large area to bond, the smaller panels are affixed with blue painter's tape on the front.



I also made two more coin returns. I've made four total, one is unusable, these three may or may not be acceptable. I will probably try building a few more until I get it right, we'll see.



*posted by Victor Franco at 11:46 PM* [0 COMMENTS](#)

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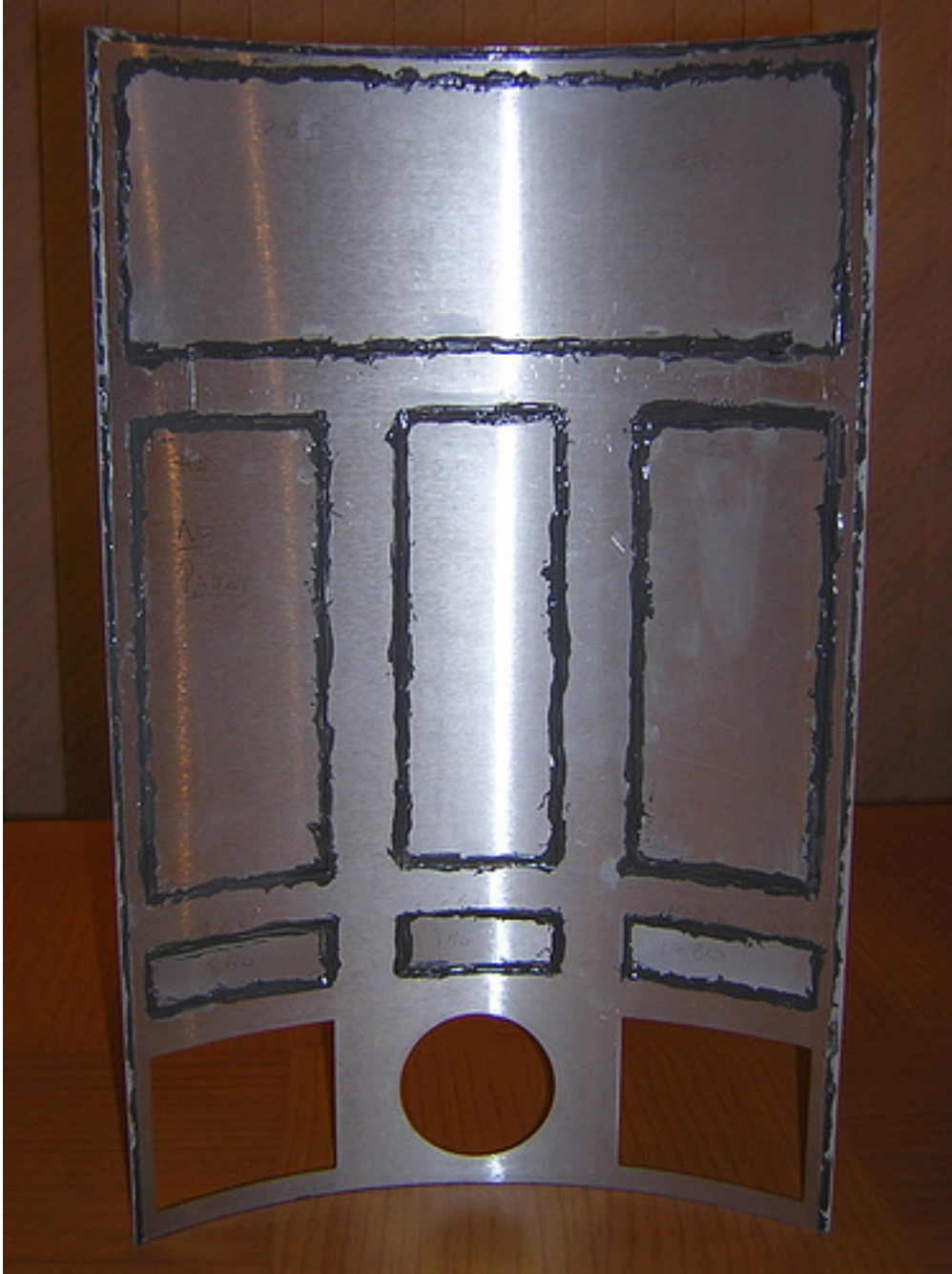
THURSDAY, JANUARY 19, 2006

## **Finished JB Welding Back Door**

I finished JB Welding the last three panels of the back door today. I probably overdid it with the JB Weld, but the stuff is kind of messy and hard to work with in my opinion. Still, for the back door I wanted the parts JB Welded together. Other panels on the rest of the skins will either be siliconed in or taped in.







I also fixed a vent insert that got loose in the front vents, and cut out another coin return (haven't folded it yet, too tired tonight).

*posted by Victor Franco at 10:18 PM* [2 COMMENTS](#)

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SATURDAY, JANUARY 21, 2006

## Temp Feet, Drilled Holes for Rails and Ankles

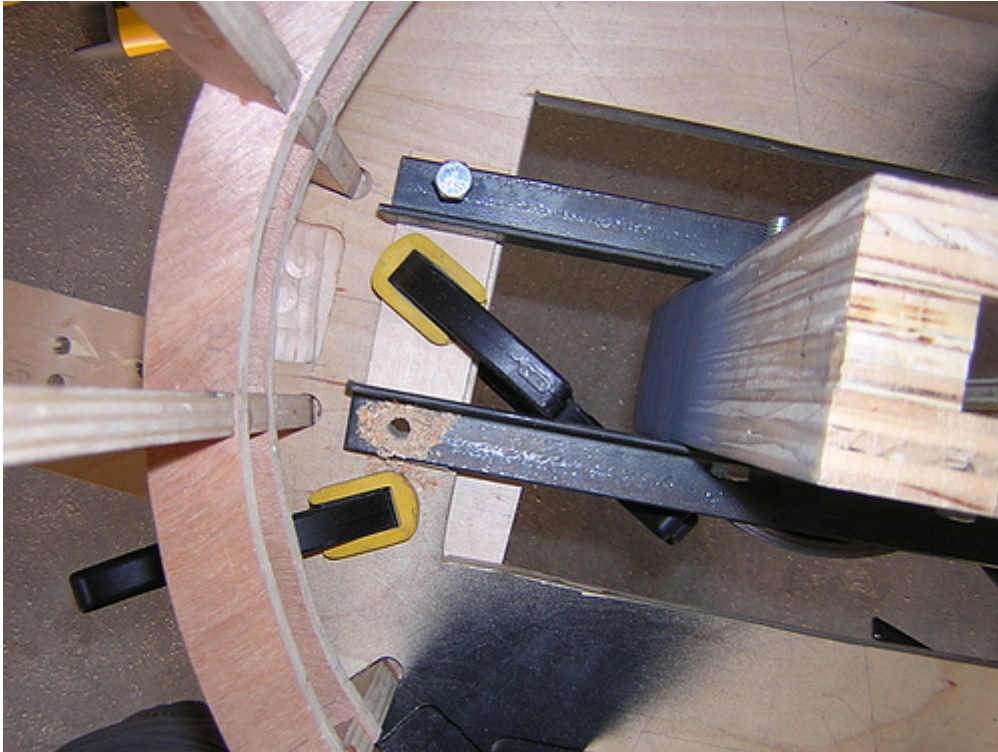
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I tried making some temporary feet to start getting R2 on all threes, but I think I made them too small, and I'll have to try again. "Measure zero times, cut many."



I finally got around to drilling the frame to support the center leg rails. The rails will sit on a couple of pieces of 1/2" plywood at the front and back of the frame. So I drilled those pieces of plywood and the frame bottom. Bolts connect the rails to the frame, t-nuts are inserted on the underside of the frame.





Finally, I drilled the holes in the ankles for the bolts that will secure the feet. The holes are  $\frac{1}{2}$ ", I'll insert a  $\frac{1}{2}$ "- $\rightarrow$  $\frac{3}{8}$ " reducer for the bolt to pass through.



*posted by Victor Franco at 9:08 PM* [0 COMMENTS](#)

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MONDAY, JANUARY 23, 2006

## Wheels Arrive

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The wheels for R2's outer feet that I ordered from McMaster Carr arrived today.



*posted by Victor Franco at 9:11 PM* [0 COMMENTS](#)

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TUESDAY, JANUARY 24, 2006

## Another Coin Return, Marked Vertical Rail

Not much progress so far this week. I made yet another coin return pocket, and again it turned out so-so at best. Once I have the coin return frame(s) cut out, I'll have a better idea as to how useable the pockets will be. I also started marking the vertical rail that connects the center leg rails on the bottom of the frame to the gas pipe up top, for drilling. A U-bolt will hold the top of this rail in place around the gas pipe that connects the legs, and its purpose is to achieve and maintain R2's 3-legged tilt. (This will be a bit clearer once installed and photographed.)

*posted by Victor Franco at 11:04 PM* [0 COMMENTS](#)

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WEDNESDAY, JANUARY 25, 2006

## Glued Shoulder Plank Bottoms

I glued the shoulder planks in place, at least on the bottom plate. Tomorrow morning after the glue has dried, I'll flip the frame over and glue the top of the planks to the top plate. This locks the planks in place, which locks the legs in place from front to back, since the gas pipe attaching the legs goes snugly through



the planks.



Every once in a while I have to take one of these pictures, otherwise it's really hard to see the progress on a day-to-day basis. All the cutout panels are blue-taped in, ready to fall out if I sneeze. The vents, coin slots, power coupling and octagon port are also sitting there loose. One day this will all be real...



*posted by Victor Franco at 11:21 PM* [0 COMMENTS](#)

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THURSDAY, JANUARY 26, 2006

## Finished Gluing Shoulder Planks

As promised, this morning I inverted the droid (sounds like some sort of euphemism), and glued in the tops of the shoulder planks to the top plate. I also dabbed some glue into the areas of the vertical ribs to make sure they are nice and secure. No pictures here, but it looks a lot like yesterday.

*posted by Victor Franco at 10:22 PM* [0 COMMENTS](#)

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SATURDAY, JANUARY 28, 2006

## Temp Feet (The Sequel), Drilled Vert. Rail, etc.

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I remade my temporary feet, this time apparently correctly. It's amazing what minimal planning can accomplish. First I cut the feet to size, and then drilled various holes. The wheels I'm using require a  $\frac{3}{4}$ " diameter axle. The hole at the top of the foot to secure it to the ankle is  $\frac{3}{8}$ ".

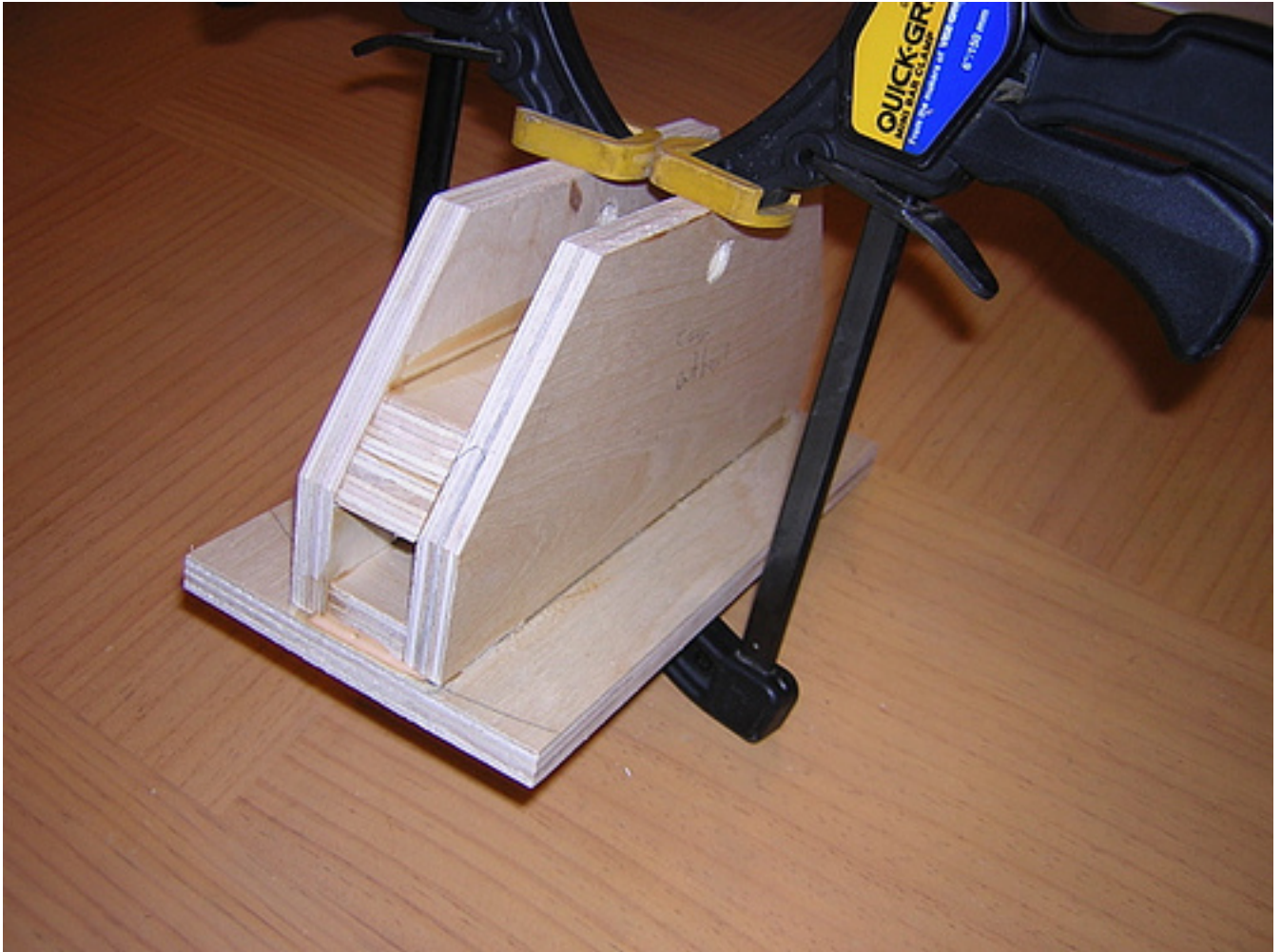


After cutting everything to size, I glued it all together. The wheels are just there to help support the other side of the foot that's about to get glued on top. The large bolts will be removable, along with the wheels. The two sides of the feet are 1.5" apart, which is just slightly wider than the wheels.





The middle temporary foot requires somewhat different construction, since it will ride on top of caster wheels. It is not quite done yet.



I drilled a hole in the vertical rail that will run from where the front bolt that secures the center leg passes through the leg rails, on up to the gas pipe that connects the legs.



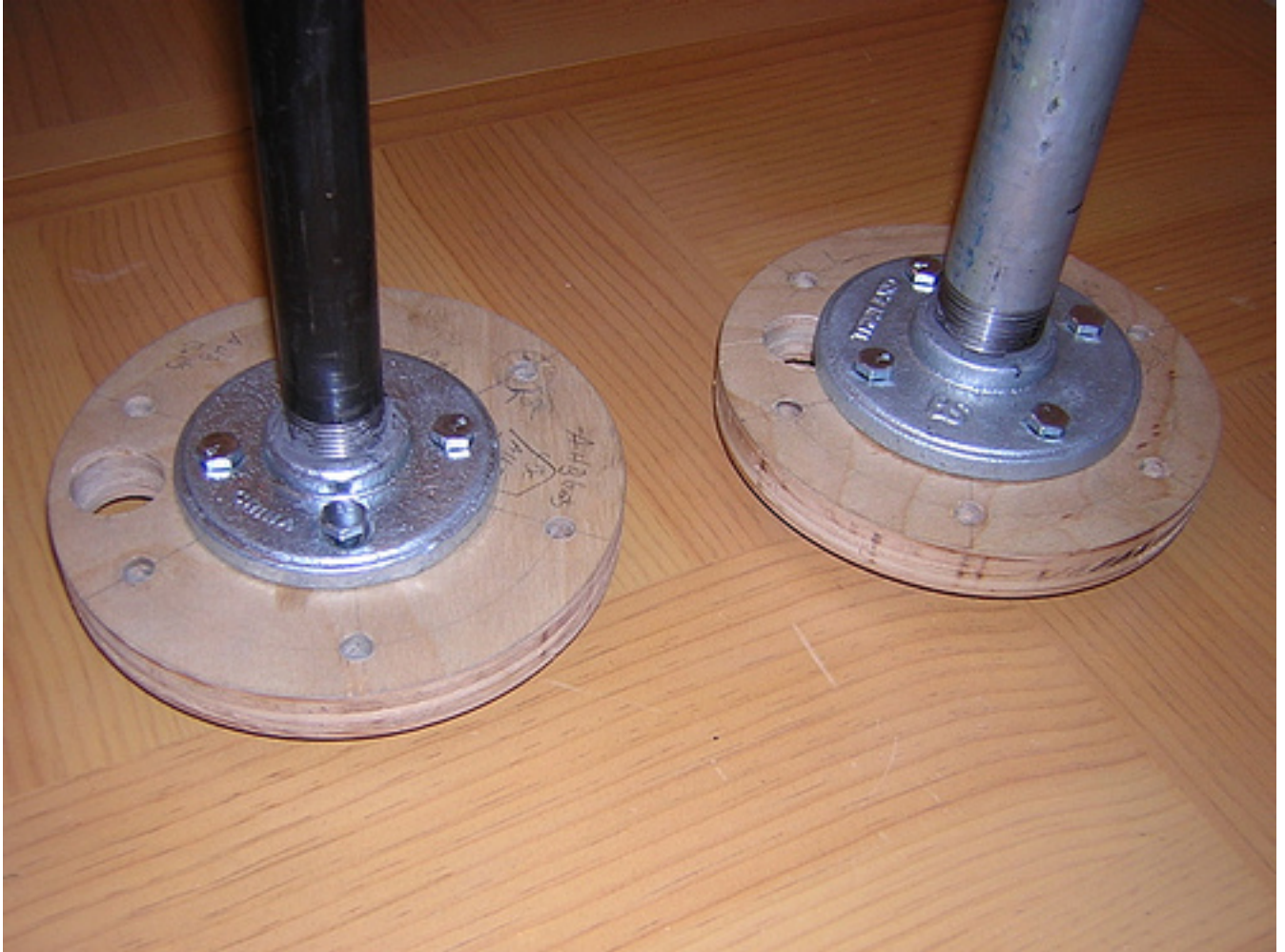


Speaking of the gas pipe, I started using a hacksaw to saw grooves into the U-bolt that will connect the top part of the vertical rail to the gas pipe. The grooves are to help get traction on the pipe. The purpose of all this is to allow R2 to tilt back 36 degrees and tighten the U-bolt around the gas pipe to hold the position.





Continuing on the gas pipe theme, I JB Welded the gas pipe into the pipe connectors, so they're in there for good.



Finally (actually, the first thing I did today), I painted the outer area of the bottom of the wooden frame white, so that the areas not covered by the skirt will match the rest of R2's body color.



*posted by Victor Franco at 9:46 PM* 0 COMMENTS

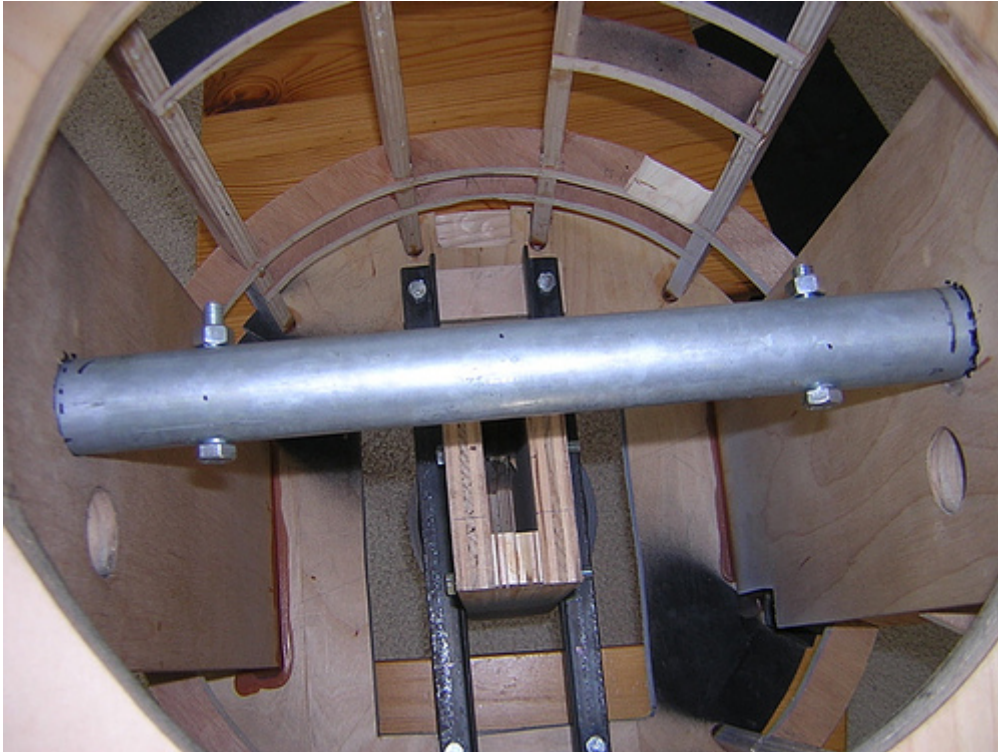
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SUNDAY, JANUARY 29, 2006

## **Drilled Gas Pipe & Rail, Fitted Bushings**

I drilled the gas pipe to fit two bolts into it to tie the legs together.





Later I drilled the vertical rail to accomodate the U-bolt that will pass through it. I also fitted the bushings inside each of the ankles (outer and center). Lastly, I attached the casters to the center foot.

I almost got R2 on 3 feet today, but the casters on the center foot were placed too close to each other, and the center foot construction may be too tall with the 3" caster wheels (plus stand) attached. I may need to remake the center foot, or modify it somehow.

*posted by Victor Franco at 10:23 PM* 0 COMMENTS

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TUESDAY, JANUARY 31, 2006

## Assembled Large Data Port

Some days I aim low, and manage to hit my target. Today was one of those days, I used JB Kwik to fasten the four parts of the aluminum large data port.



*posted by Victor Franco at 10:15 PM* [0 COMMENTS](#)

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WEDNESDAY, FEBRUARY 01, 2006

## Remade Temporary Center Foot

The temporary center foot I made last weekend was too tall (I didn't consider just how tall the casters were), so I remade the foot tonight. It was a rush-job and is too ugly for pictures, but it'll show up sometime soon.

*posted by Victor Franco at 9:28 PM* [0 COMMENTS](#)

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FRIDAY, FEBRUARY 03, 2006

## Three Legs!

Finally!! Another mini-milestone, R2 is standing on his own three legs. I found that I needed to recut and redrill the vertical rail that connects the front center foot bolt to the U-bolt up top going around the gas pipe. There was not enough room to fit a socket wrench in the L joint of the rail to tighten down the U-bolt nuts. So another cut with the jigsaw, some drilling, and lo-and-behold, R2 (or the frame at least) is now standing on all threes.

The skins are currently off. What I will need to do next is take this all apart, screw down the inner and outer skins, and start gluing down the panels to the skins with silicone. Then I can put the legs back on, and R2 will start to look a bit more real.



*posted by Victor Franco at 10:23 PM* 0 COMMENTS

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SATURDAY, FEBRUARY 04, 2006

## Attached Skin Panels

I used silicone to affix panels for the skins that will be attached permanently, and masking tape for those panels that I may want to be able to open and close on a hinge at some future date. The panels with silicone are held in with blue tape while the silicone cures overnight, and then the blue tape will come off and the legs will go back on.

Silicone was applied to the inner skin's cutout edges, then the panel was attached and taped in place. After a few hours, I went over the inside of the skins to apply silicone on the back. Those panels that are held in with masking tape are only taped in from the inside.









*posted by Victor Franco at 9:59 PM* 0 COMMENTS

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SUNDAY, FEBRUARY 05, 2006

## **Back on Three Legs**

I removed the blue tape this morning that held the panels in place while the silicone dried. Then I reattached the legs. That's all I had time for today. This is where I was hoping to be by the New Year. I missed it by over a month. Oh well...





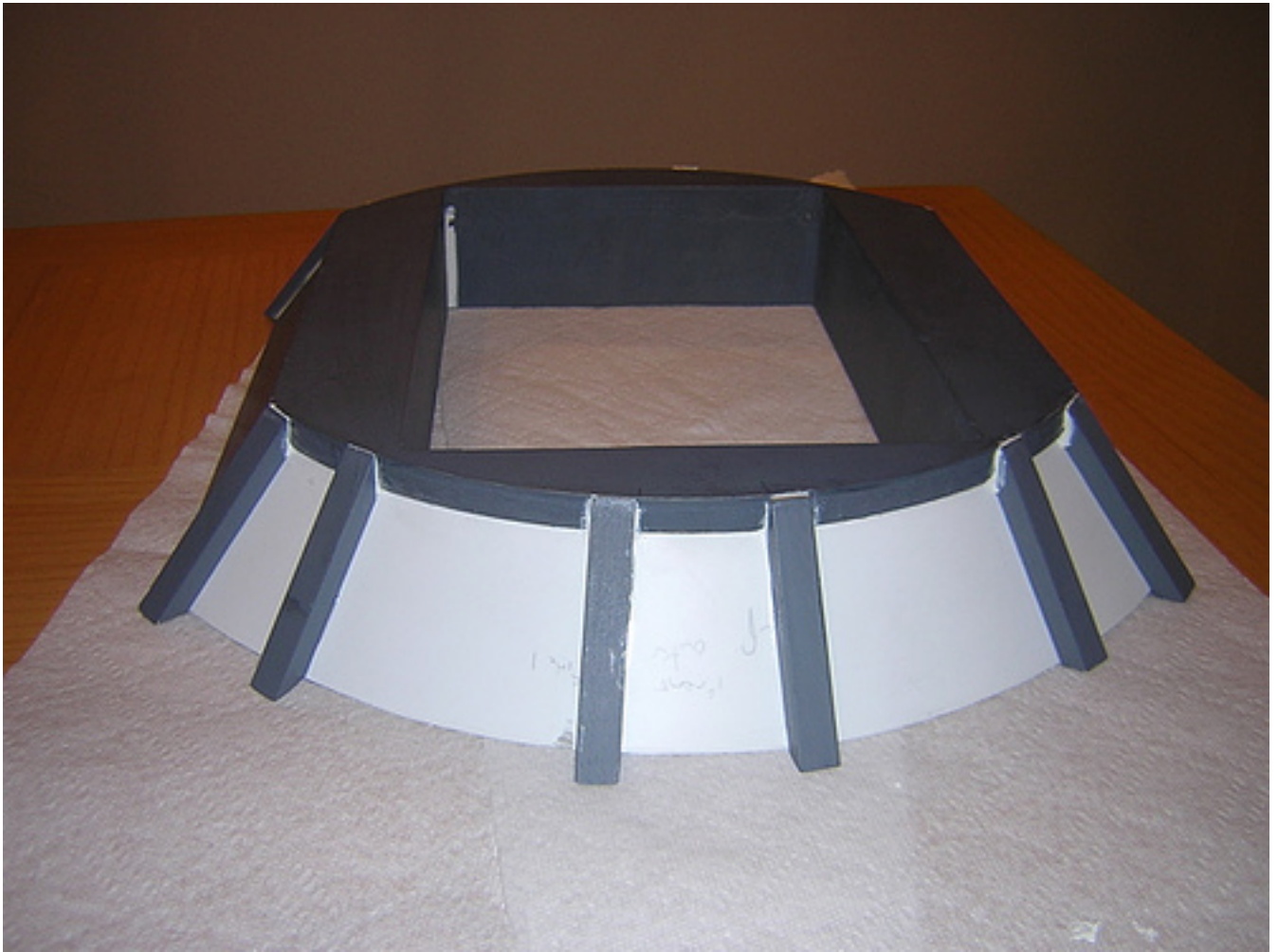
*posted by Victor Franco at 9:49 PM* 0 COMMENTS

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MONDAY, FEBRUARY 06, 2006

## **Patched Up Skirt**

I used some white, paintable silicone to patch up gaps in the skirt, in preparation for painting.



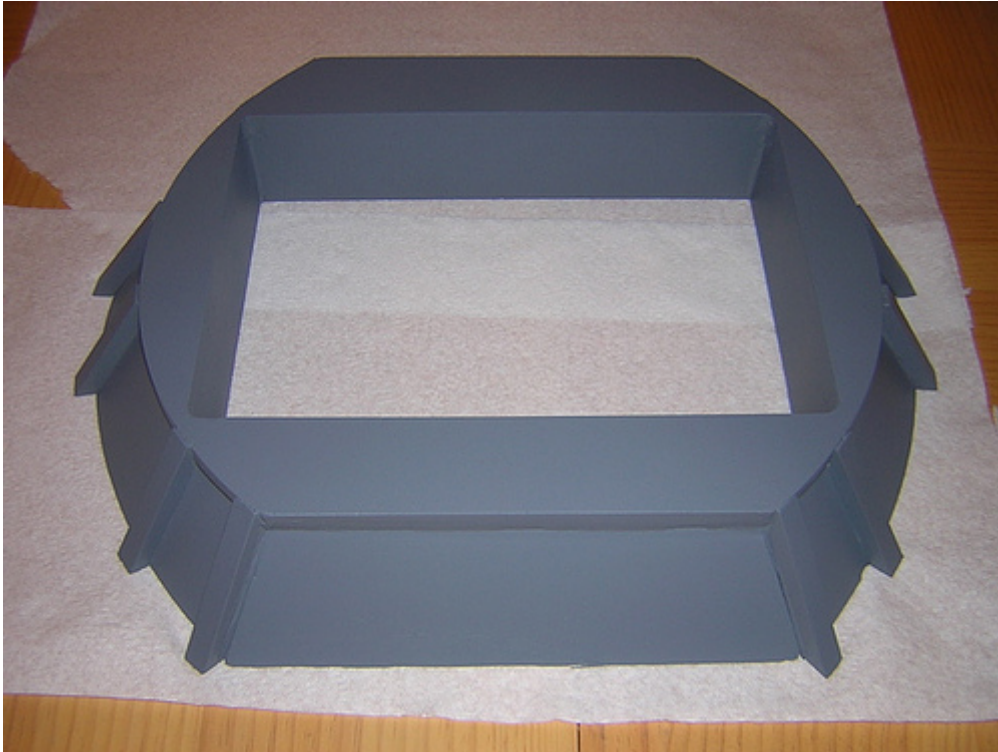
*posted by Victor Franco at 9:38 PM* 0 COMMENTS

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WEDNESDAY, FEBRUARY 08, 2006

## **More Skirt Primer**

I'm getting close to painting and installing the skirt, so I applied some more primer and did some sanding to work out the remaining wood grain. The styrene part of the skirt finally got its coat of primer as well.



I also gave a try at cutting some of the power coupling details from aluminum sheeting, but so far all I've managed to do is confirm that I do not cut aluminum very well.

*posted by Victor Franco at 10:35 PM* 0 COMMENTS

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THURSDAY, FEBRUARY 09, 2006

## Yet More Skirt Primer

Another couple of passes with the spray can of primer for the skirt today. Pretty mundane.

*posted by Victor Franco at 10:57 PM* 0 COMMENTS

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TUESDAY, FEBRUARY 14, 2006

## EE Droids Arrive

Okay, this isn't even close to building. I just got back from a business trip (weekend work included...) and have nothing else to report, so at least I can show off my newest droid collection. Hopefully I can get back to building soon!





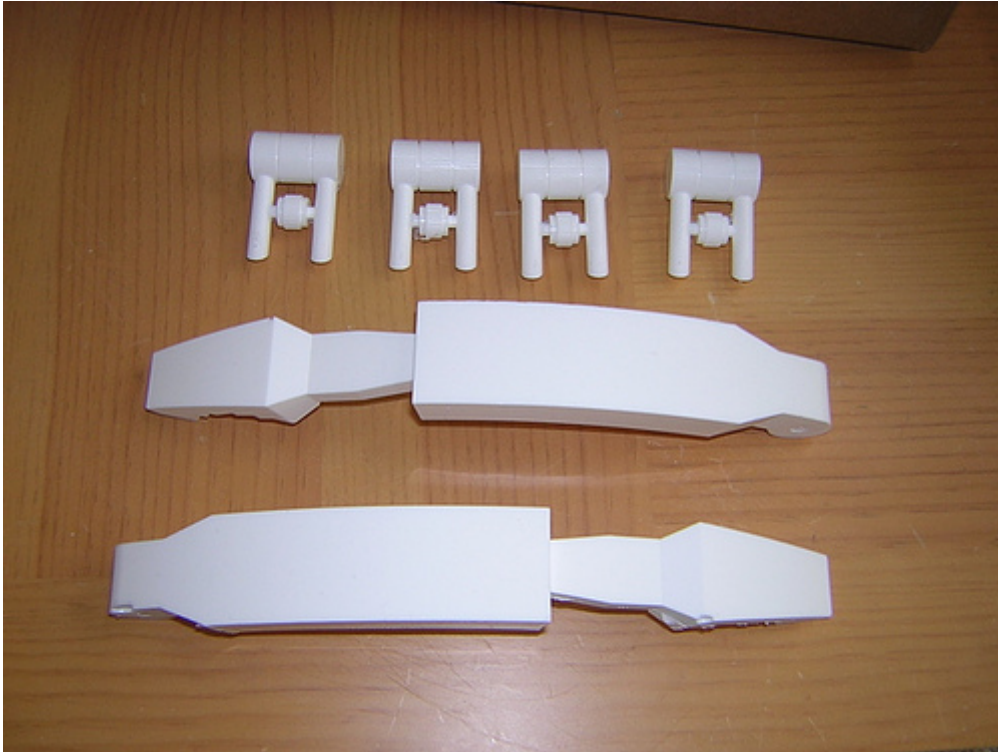
*posted by Victor Franco at 9:52 PM* 0 COMMENTS

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THURSDAY, FEBRUARY 16, 2006

## **More Resin Parts, Started Gluing Horseshoes, Skirt Work**

More of Keith's resin parts arrived, this time the utility arms and under shoulder details.

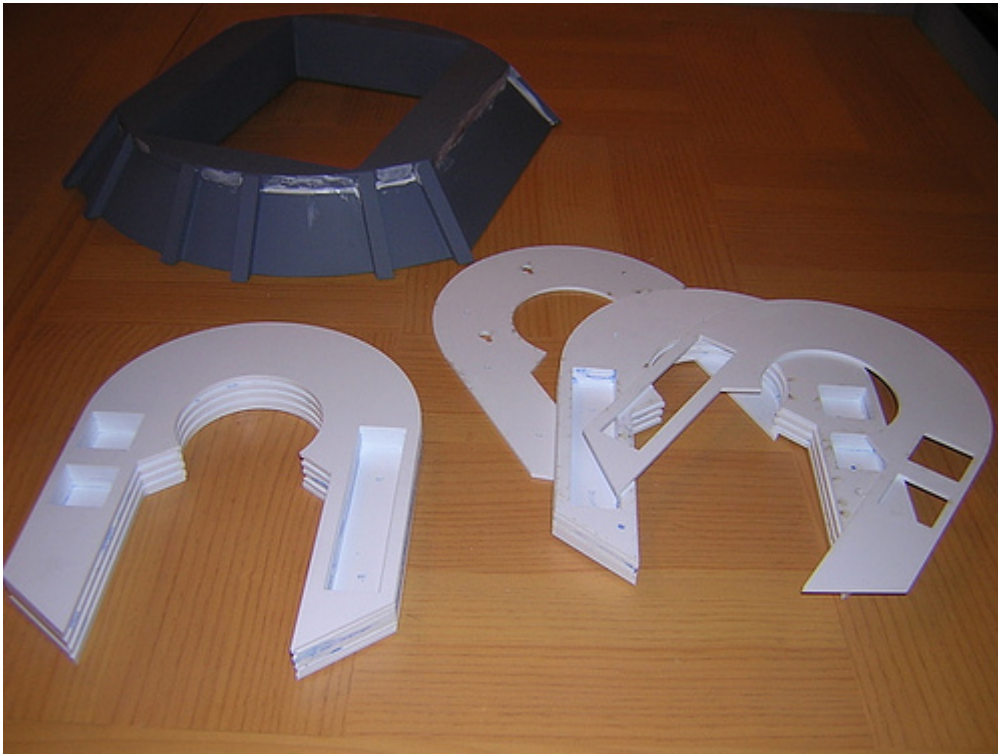


I started gluing together the A&A layered shoulders (aka "horseshoes") with blue PVC cement. I haven't glued the top-most and bottom-most layers yet. I may leave the bottom-most layer (the shim layer) unglued to facilitate repainting in the future. Even though the PVC is white, I will probably apply some primer and white paint anyway, to help cover some of the laser marks and areas where the blue PVC cement stained the PVC. I also need to paint the inner circle area silver. Note that I flipped each layer upside-down for one of the shoulders, so that the buttons and hydraulics will be oriented the same for both left and right shoulders.



I finished up by applying some paintable white silicone to some rough areas of the skirt and smoothing it over with a razor blade. It looks messy now, hopefully when the whole thing is painted white, it will be okay. I'll know soon.





*posted by Victor Franco at 9:00 PM* 0 COMMENTS

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FRIDAY, FEBRUARY 17, 2006

## Painted Skirt

I painted the skirt white today, applying several coats of Rustoleum Satin White. I may need to come back with the white silicone and touch up a couple of areas near the ribs and various seams that can use a bit of improvement. Hopefully I'll get the skirt mounted this weekend.



*posted by Victor Franco at 8:46 PM* [0 COMMENTS](#)

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SATURDAY, FEBRUARY 18, 2006

## **Skirt Attached**

I drilled holes in the bottom of the frame today, and mounted the skirt. I think I'm going to start calling the skirt my "current skirt" because I'm not all that happy with it, and hope to have time to remake it one day. But for now it will have to do.



*posted by Victor Franco at 8:40 PM* 0 COMMENTS

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SUNDAY, FEBRUARY 19, 2006

## Installed Side Styrene Pieces

I attached the side styrene pieces that cover up the bottom part of each side today. There is a small wooden post behind the styrene that is glued to the bottom of the frame and the back of the styrene, supporting the styrene.

Hmm. I wonder what I should work on next?





*posted by Victor Franco at 4:17 PM* 0 COMMENTS

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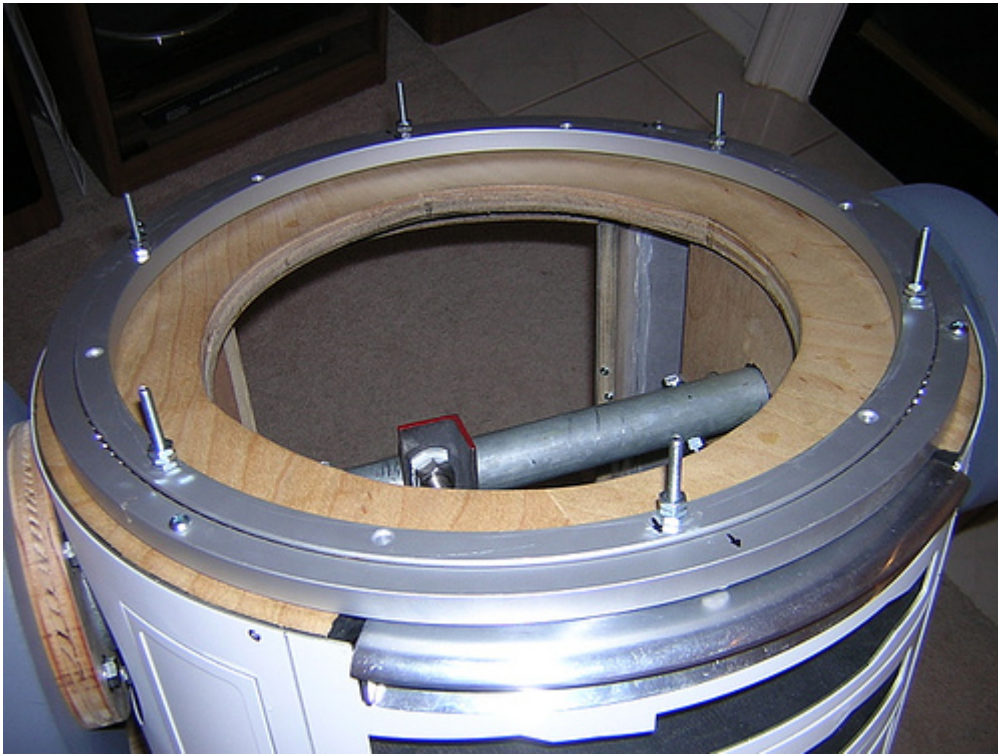
MONDAY, FEBRUARY 20, 2006

## **Sanded Eye, Installed Rockler Bearing**

In the morning, I sanded down the nubs on the radar eye.



Then, it was off to Mike Senna's where Mike very kindly installed my Rockler bearing onto the top of my frame (see [Rockler Bearing](#)). This involved drilling four holes into the bearing's outer ring (and the frame underneath it), to secure it with screws to the top of the frame, along with the insertion of six screws in the inner ring that went into six corresponding holes in the dome ring, also drilled today. The fit was pretty much perfect. Now R2 doesn't have to go around headless anymore. Thanks another million, Mike!



Now I will probably sit and stare at the dome for a while, as I psyche myself up to get to work on it. It may be quiet here for a day or two.

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*posted by Victor Franco at 9:38 PM* [2 COMMENTS](#)

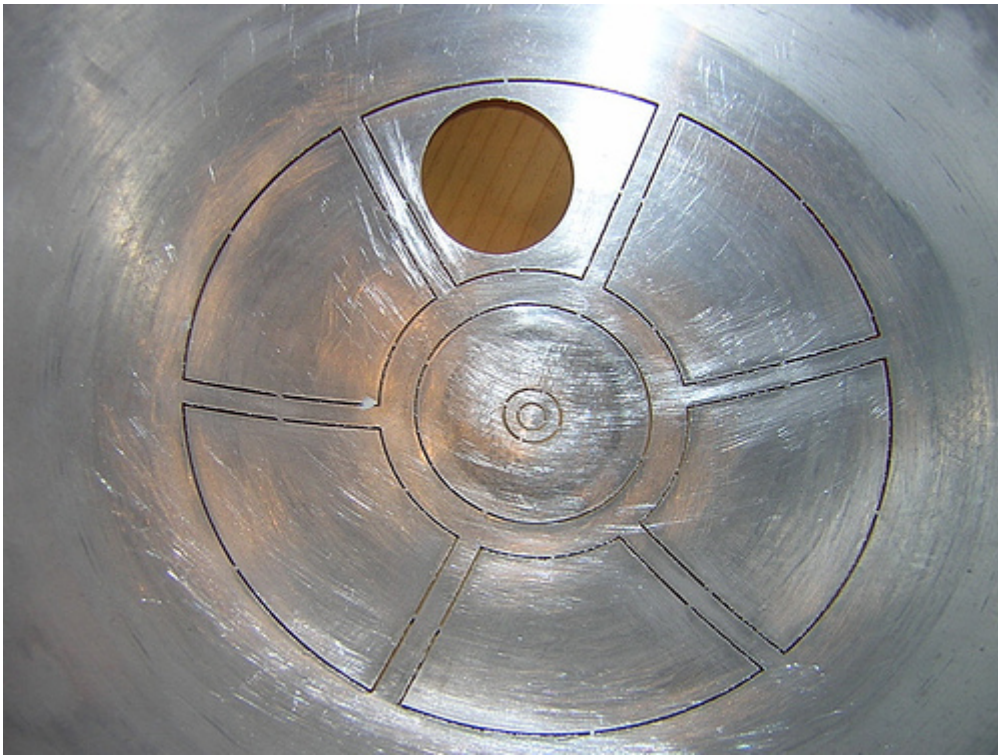
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FRIDAY, FEBRUARY 24, 2006

## Started Working on Dome

(Sorry for the delay, it's been a busy week...)

Today I finally started working on the dome. It was a modest effort, where I sanded the inside part of the outer dome to get rid of the flashing from the laser cuts. The outer dome does not yet sit flush against the inner dome, so some sanding somewhere still needs to take place.



*posted by Victor Franco at 8:15 PM* [0 COMMENTS](#)

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SATURDAY, FEBRUARY 25, 2006

## Started Sanding Inner Dome

Oh boy, here we go. Each R&J dome owner gets to go through a rite of passage, sanding the outer surface of the inner dome, until it fits flush against the inside surface of the outer dome. Well, I sanded and sanded and sanded some more for several hours today, and although I think I managed to sand off a fair amount of surface, I still have a long way to go (millimeters, but still...) before the tops of the two layers meet up. I mostly sanded by hand using 60 grit sand paper, but I also

used a random orbital sander for a few minutes. Tomorrow I may go back to the sander for a while. I have no idea how many days I'll be sanding...



*posted by Victor Franco at 11:43 PM* 0 COMMENTS

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SUNDAY, FEBRUARY 26, 2006

## Dome Sanding Day 2

I sanded a few more atoms off the inner dome. I've left all the panels intact on the outer dome, so whenever I check to see how close the tops of two domes are to each other, I check the hole for the top holoprojector. I check alignment, then rotate the inner dome about 90 degrees, check alignment and rotate again, etc. to make sure I'm sanding evenly. I had to stop once the blisters took over. :(

The two domes are close, but I need to eliminate the gap altogether, or the pie panels will sit too low compared to the rest of the outer dome.



*posted by Victor Franco at 5:51 PM* [0 COMMENTS](#)

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MONDAY, FEBRUARY 27, 2006

## R2LA III DVD Arrived

Yea, my R2LA III DVD arrived today. (Hey, I'm on that thing, and I shot a little bit of the leg tutorial [the primer and shoulder discs].) I guess this means I didn't get around to doing any building today...

*posted by Victor Franco at 8:55 PM* [0 COMMENTS](#)

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WEDNESDAY, MARCH 01, 2006

## Mind the Gap

There's still a gap, and I mind it.

Day 3 of dome sanding, and I'm beginning to think the problem of not having a flush fit has more to do with the top area of the inner dome, rather than the side area. Tonight I used a combination of the random orbital sander, and sanding by hand. I've sanded the heck out of the sides, to the point that any more sanding and the inner dome may start to fit too loosely. I don't want to be able to see

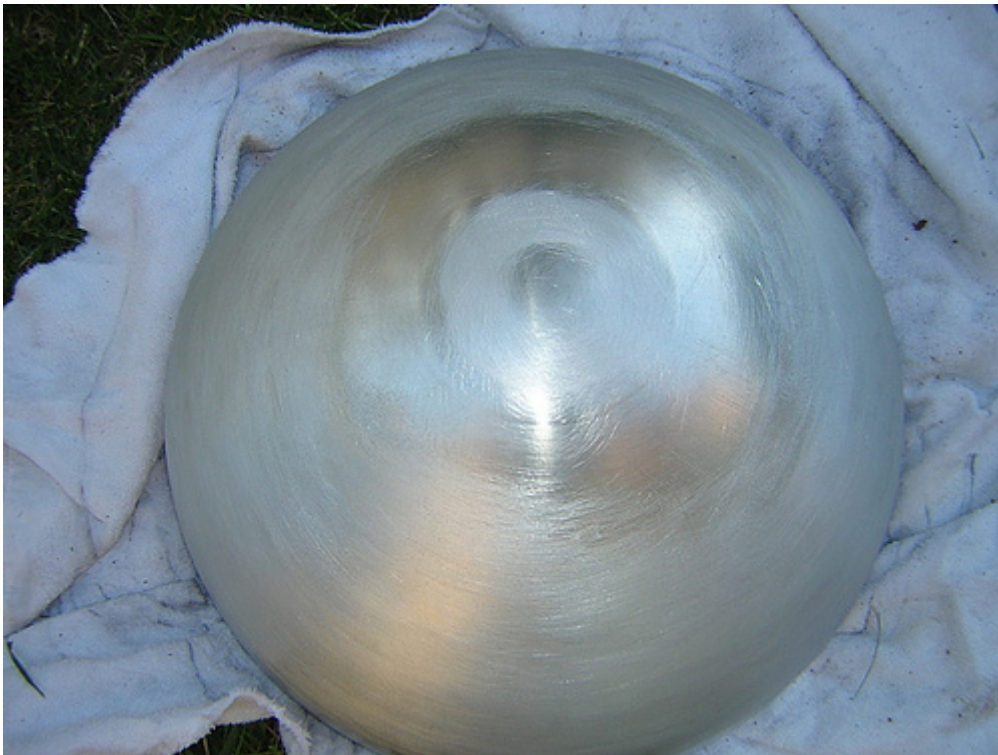


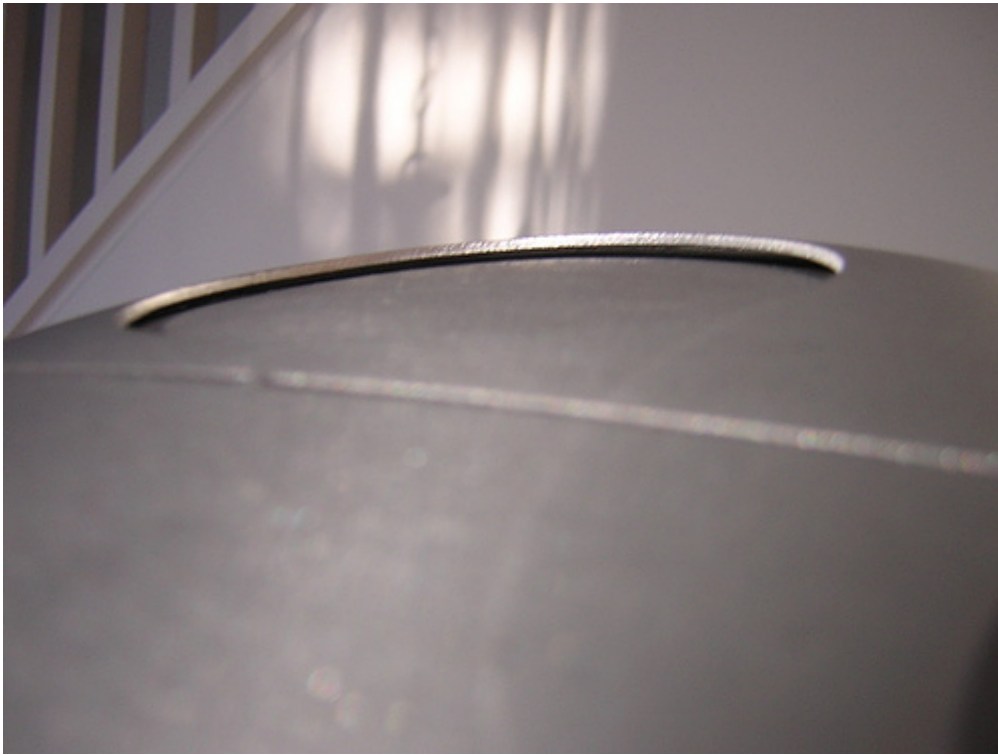
through it. So I started sanding the top area of the inner dome, it's hard to tell if it had an effect.

With all the panels in place, I can't determine exactly what is keeping the upper areas of the pie panels from resting on the top of the inner dome, but there is still an approximate 2mm gap, and it really needs to be eliminated.

I'm considering removing the large circle of the outer dome to get a better idea of how things fit up there, but I'm not sure I won't regret that, so I'll mull it over. "Hmm..." (That's the sound I make when I'm mulling.)

The weather might get bad the next day or two, so I need to find something else to work on in the meantime; not that there's a lack of stuff that needs doing.





*posted by Victor Franco at 5:32 PM* 0 COMMENTS

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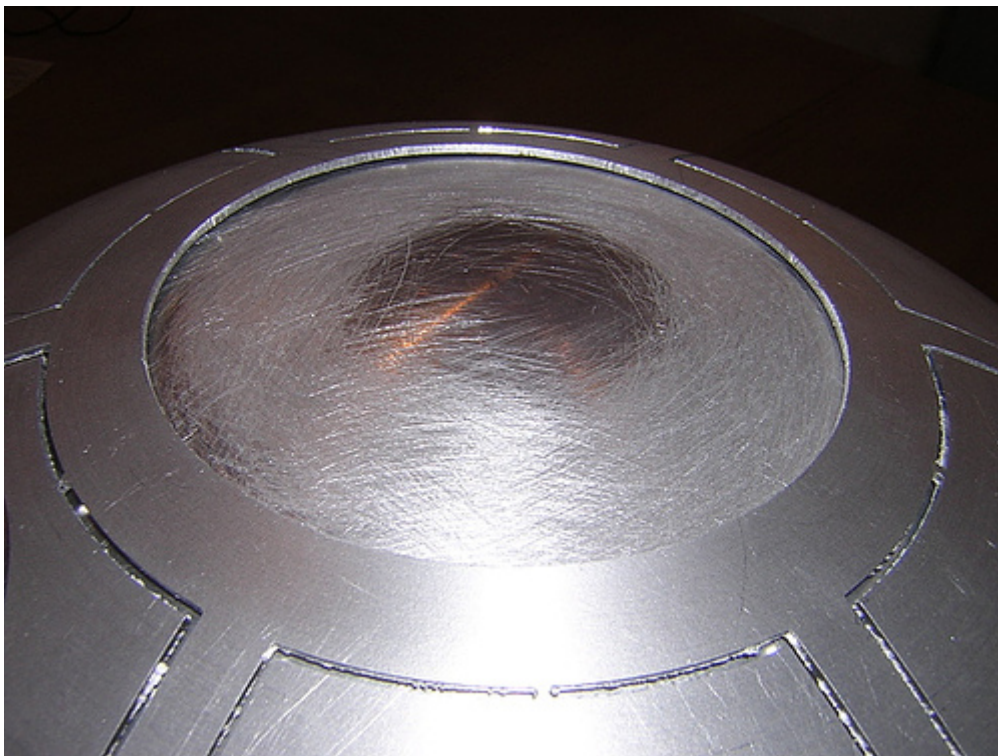
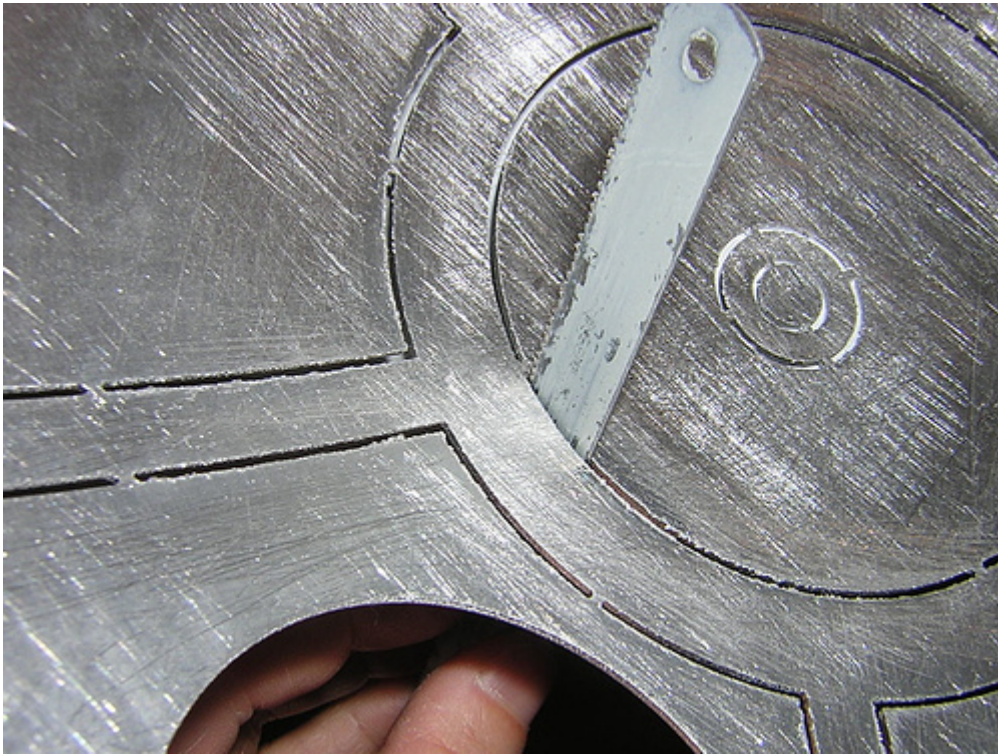
THURSDAY, MARCH 02, 2006

## Cut Out Top of Outer Dome

I cut out the top large circle of the outer dome to see if perhaps it was riding too low, but apparently that was not the case. The circle cutout rim that remains on the outer dome still hovers a little bit over the inner dome, and I'm really not sure what to do about it. I posted to the board tonight to see if anyone has any ideas.

Perhaps I should just cut the inner dome in half (parallel to the bottom of the dome) about midway up, but I'm not sure that will even solve this problem. Another option is to just bend the ribs that separate the pie panels inward a bit, so that they rest on the inner dome, but I'd rather not do that if I can avoid it.

So I'm really not sure what to do yet, but I'm sure this will be resolved somehow sooner or later.



*posted by Victor Franco at 10:09 PM* 0 COMMENTS

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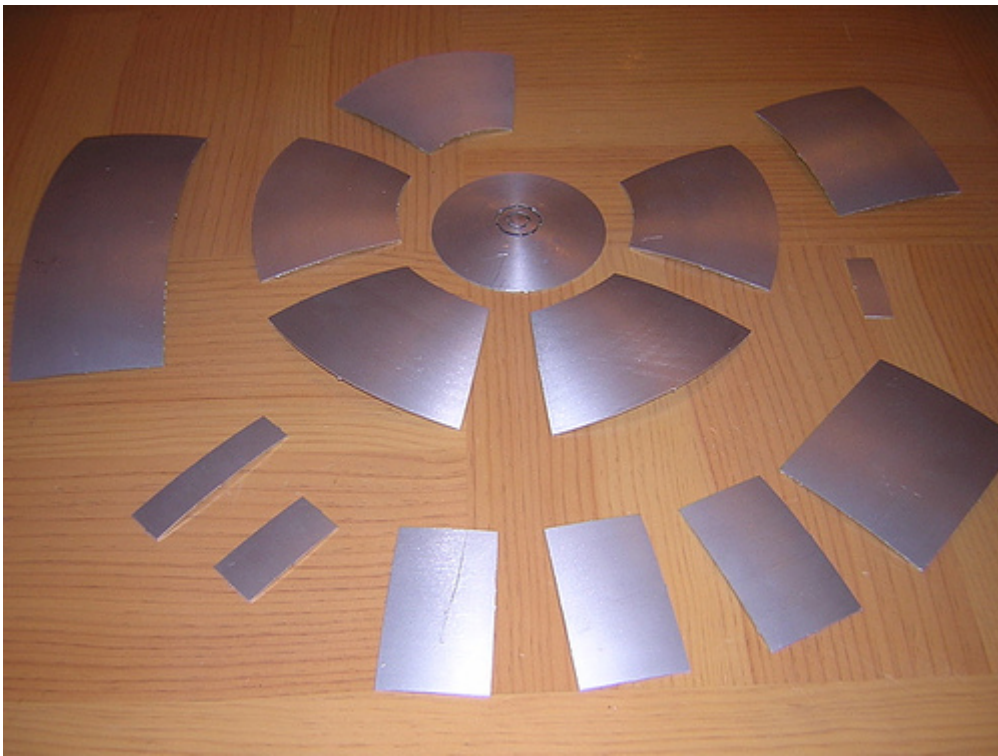


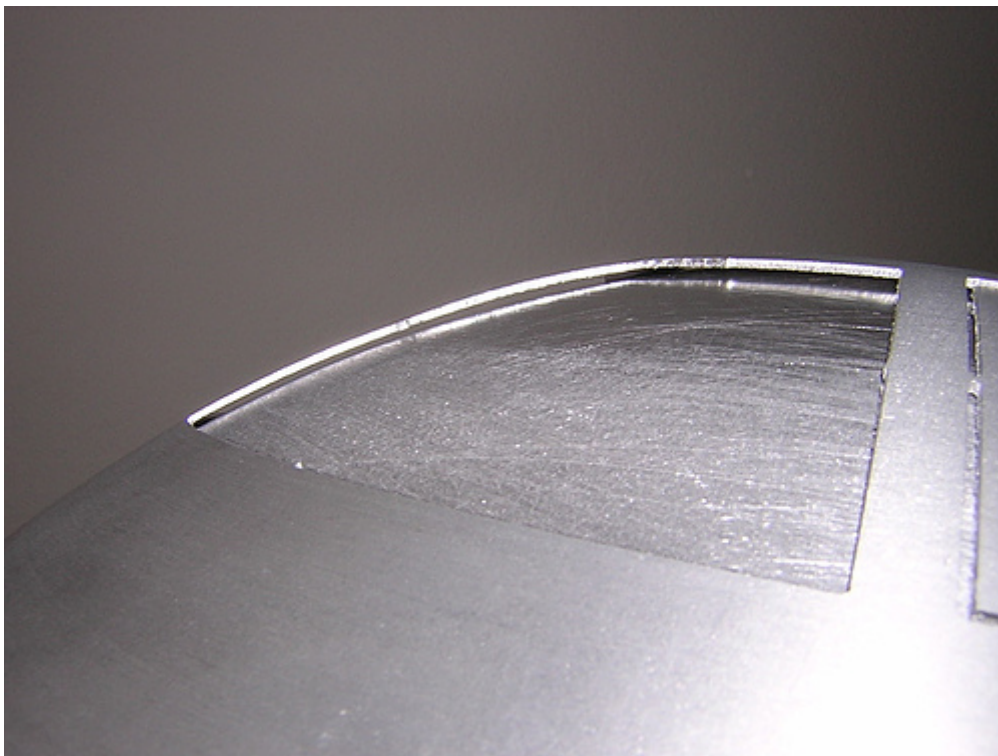
FRIDAY, MARCH 03, 2006

## More Dome Panel Cutouts

In order to get a better look at how the inner and outer domes are fitting, I cut out all the remaining panels that don't have a hole or require tracing. I've held off on the other panels because I want to wait until I know how the two domes will be oriented relative to each other, and then trace the areas onto the inner dome's surface that need cutting.

It is much easier to see the gap under the ribs that separate the pie panels now. The inner dome may need to be cut, I'm still studying this. I got a lot of helpful advice from the board today, thanks to everyone who pitched in!





*posted by Victor Franco at 8:50 PM* 0 COMMENTS

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SATURDAY, MARCH 04, 2006

## Dome Saga Continues

Today I dropped by Mike Senna's house with my dome for a little while, to get his opinion on what to do. The good news is that Mike didn't think I needed to cut the dome, and in fact a dome cut likely wouldn't help a lot. His thoughts were that I need to do some more sanding on the inner surface of the outer dome, to remove a small amount of laser slag remaining here and there that I missed earlier. I should also sand the top of the inner dome a bit more. If the pie panels sit too low, then I can use layers of double-sided tape to elevate them a bit. In fact, Mike showed me that he has a similar issue on his original dome as well, but it's almost impossible to see without getting up really close and looking for it. So I think everything will turn out okay.

When I got home, I got to work sanding off the remaining flashing, and I filed down the nubs that the tabs left when I hacksawed-out the panels. Tomorrow I'll probably sand the top of the inner dome a bit more, and maybe work on prepping the radar eye.

*posted by Victor Franco at 7:58 PM* [2 COMMENTS](#)

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SUNDAY, MARCH 05, 2006

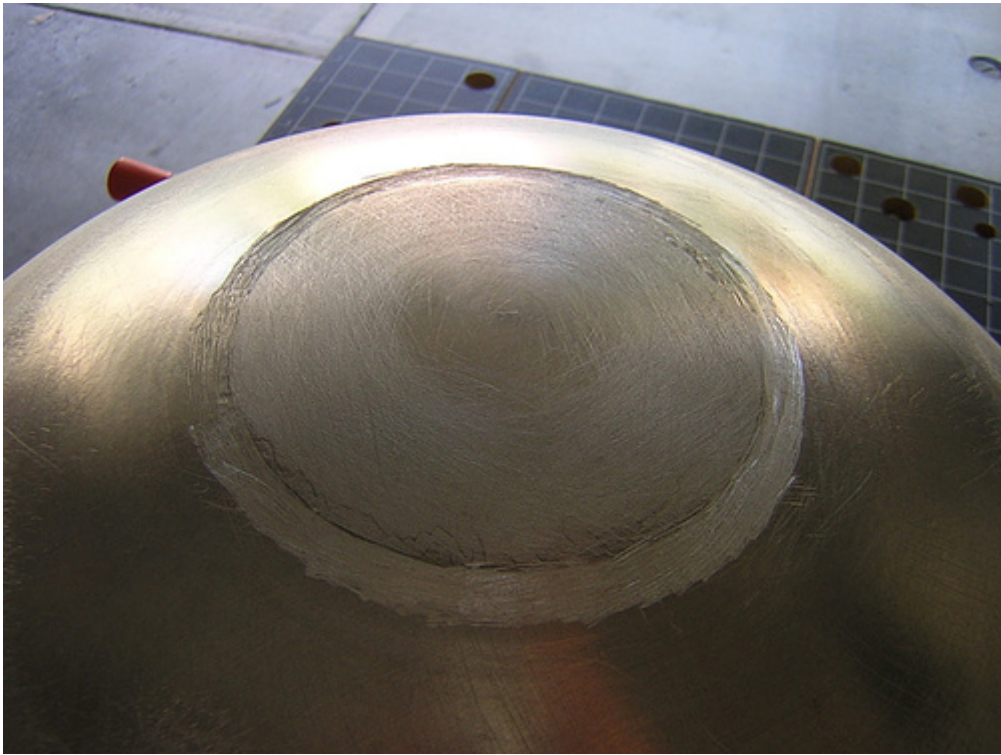
## Dremeled Dome and Eye, Filed and Sanded Dome Cutouts

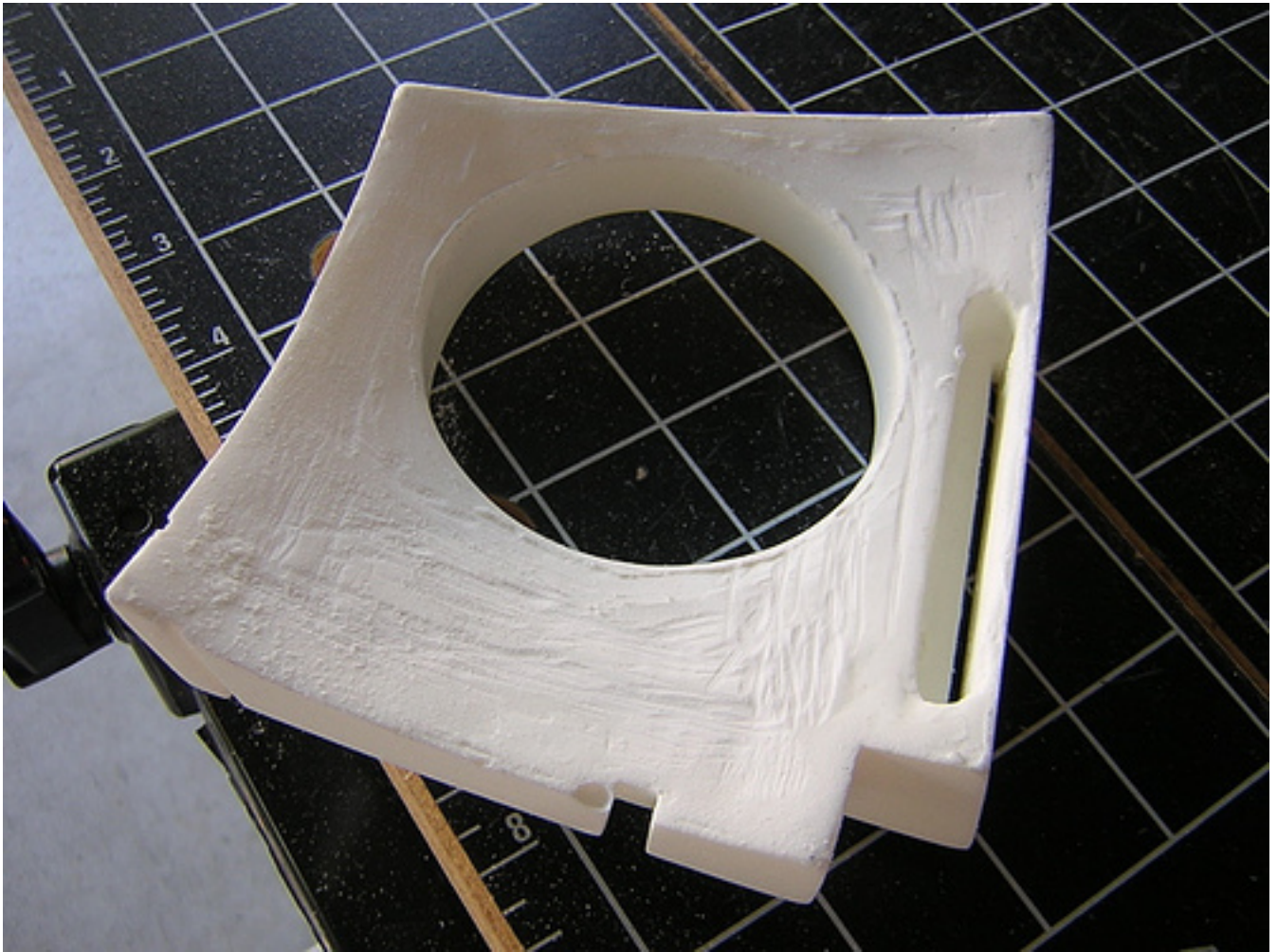
In what I think will conclude the work on getting the domes to fit, I used the sanding drum on the Dremel to sand down the circle area where the top of the outer dome meets the inner dome. This helps reduce the gap to the point that I think I'll be able to live with it, without resorting to cutting the inner dome. I will need to somehow shim the pie panels a bit to raise them to the level of the ribs separating them, but not by much.

I also used the same Dremel setup to sand out areas on the back of Keith's resin radar eye, per Mike Senna's advice. The idea is to make sure that the "box" of the outline of the eye rests evenly on the dome surface. By sanding down the back of the eye except for the edges, it makes it easier to make sure the edges are touching the dome and meet without any gaps. I will tape some sandpaper to the dome surface and sand the eye against it, to get the curve of the back of the eye just right.

I also filed down the tabs on the rest of the dome cutout pieces that I didn't get to yesterday.







*posted by Victor Franco at 7:16 PM* [0 COMMENTS](#)

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MONDAY, MARCH 06, 2006

## Sanded Eye Against Dome

Today I started sanding the back of the resin radar eye against the dome. I put some blue painter's tape on the dome to avoid scratching it, then held some 150 grit sand paper against it, and started sanding the back of the eye to get the curve to match the dome.

Unfortunately I didn't tape the sand paper down, and I didn't notice that it had creased a bit. As I was sanding the back of the eye, I was also sanding out a 'V' shape into the left edge of the eye. :( More sanding may fix this, but I may get another resin eye in case I can't undo the damage. Yet another entry for my Lessons Learned file.

Michael McMaster's R2LA II DVD arrived today, so now I have the whole collection!

*posted by Victor Franco at 11:16 PM* 0 COMMENTS

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TUESDAY, MARCH 07, 2006

## More Radar Eye Sanding

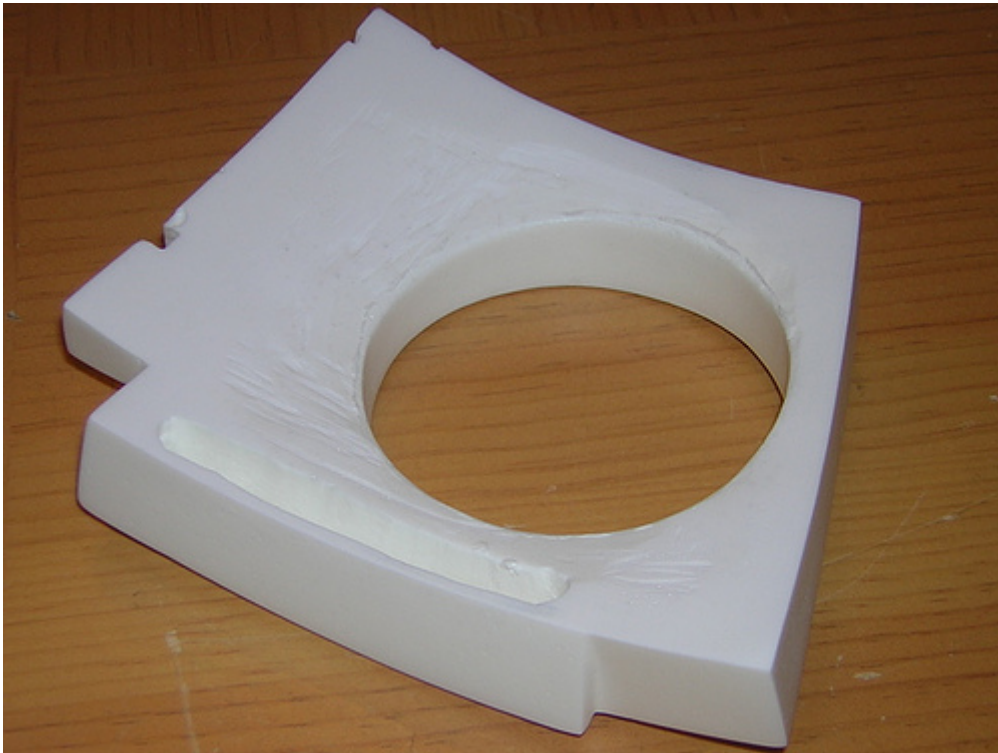
I can think of no better way to spend a March 7, 2006 evening than in the garage, sanding the back of a resin radar eye on top of my washing machine. Can you?

(As a reminder, the purpose of this is to get the back of the eye to sit flush against the dome surface.)

I was able to even out the 'V' mark I accidentally sanded into the left edge of the eye yesterday, so I think the eye will end up okay. I was sanding for about 3 hours all told tonight, mainly because I didn't scrape off enough inner material off the back of the eye with the Dremel the other day. This took way longer than it should have due to my ineptitude, and I still have another light pass or two with the sand paper to go. But it does look nice this way, with mostly sharp edges now and a tight fit on the dome.







*posted by Victor Franco at 9:31 PM* 0 COMMENTS

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WEDNESDAY, MARCH 08, 2006

## Still Sanding the Eye

Mr. Sandman continues to antagonize the radar eye. More of the exact same as yesterday, except I only had a few minutes this morning to sand the back of the eye before I had to run to work. We took my dad out for his birthday tonight, so not much got done today.

Wow, according to the [SiteMeter](#) at the bottom of the page, there are a lot of people making sure I don't start slacking! :)

*posted by Victor Franco at 9:21 PM* 0 COMMENTS

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THURSDAY, MARCH 09, 2006

## Finished Sanding Eye

I finally finished sanding the back of the eye tonight, so the eye rests pretty snug on the dome. I also lightly sanded the surface of the eye in preparation for primer. Sorry, nothing more exciting than that.

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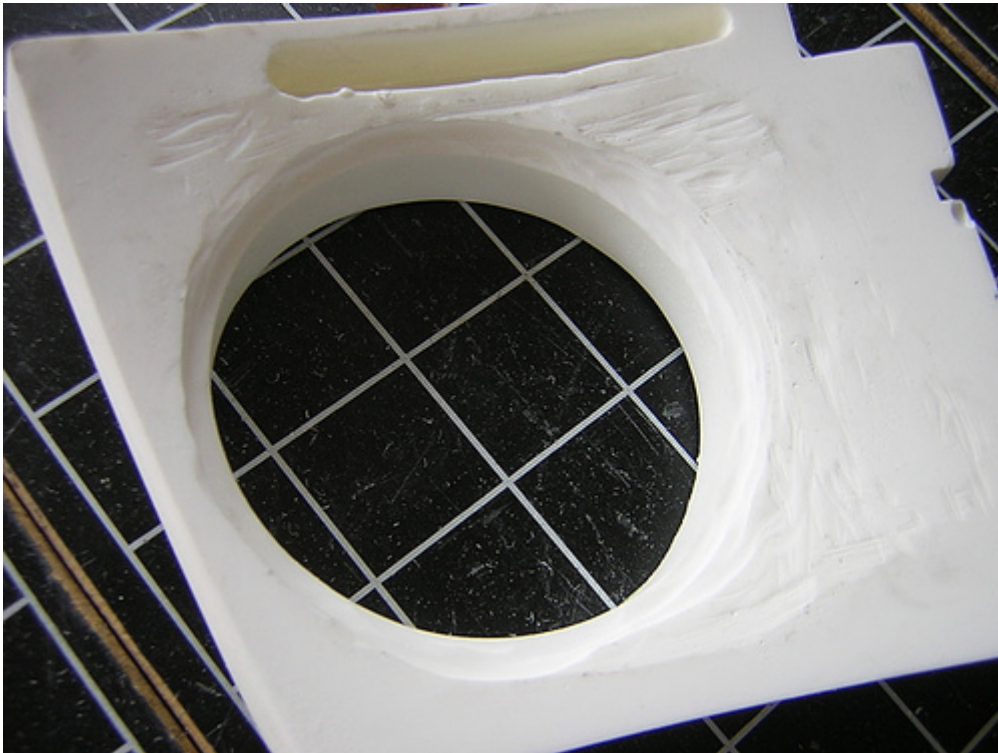
*posted by Victor Franco at 9:51 PM* 0 COMMENTS

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SATURDAY, MARCH 11, 2006

## Eye & Lens Work, Prepped Dome for Cutting

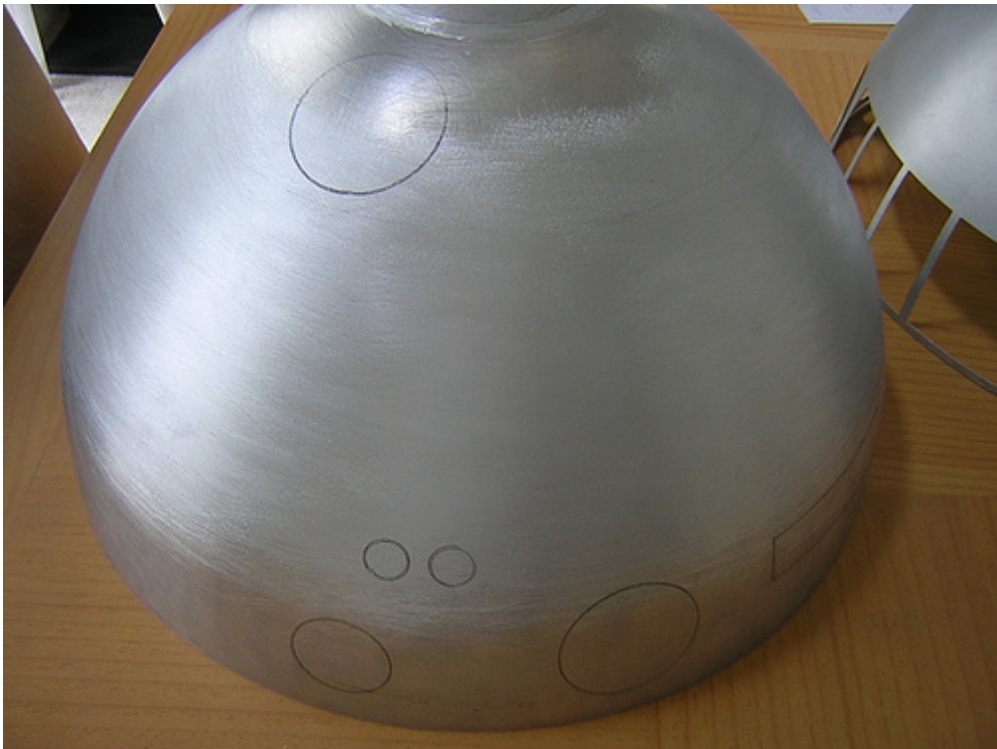
I Dremeled out a groove in the back of the eye to better accommodate the lens.



Then I Dremeled down the lip of the lens a bit to fit it into the groove in the back of the eye.



Finally, I marked up the areas of the inner dome that need to be cut to allow things like holoprojectors and lights to pass through to the outer dome. I hope to start cutting tomorrow, but I won't start until I'm sure I know what I'm doing and how I'm going to do it.





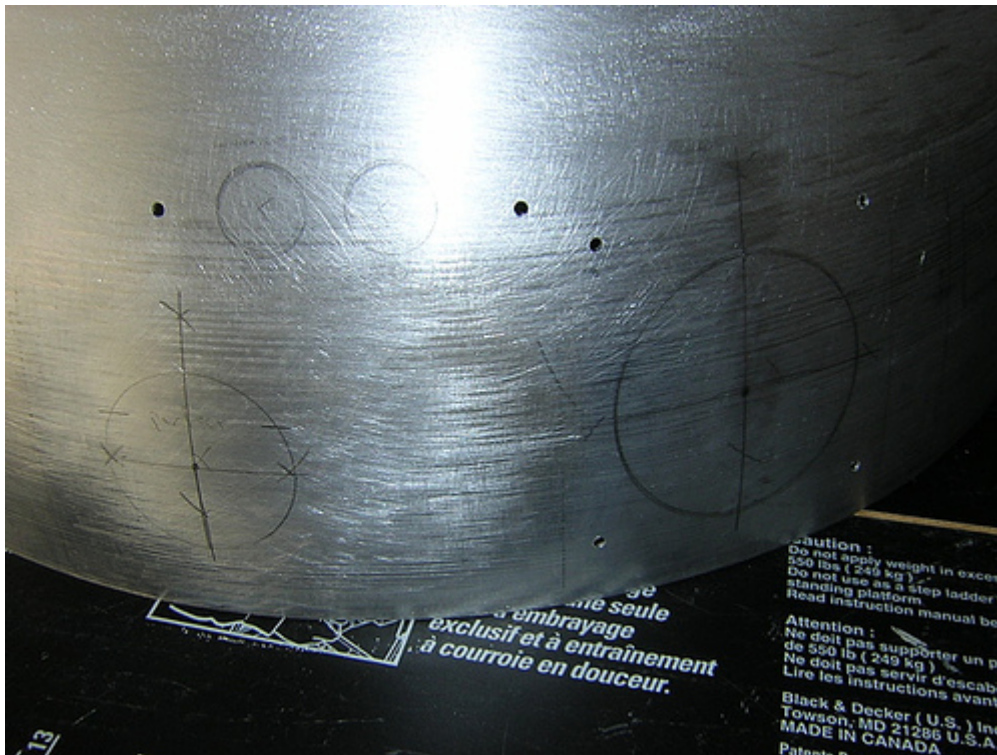
*posted by Victor Franco at 10:29 PM* 0 COMMENTS

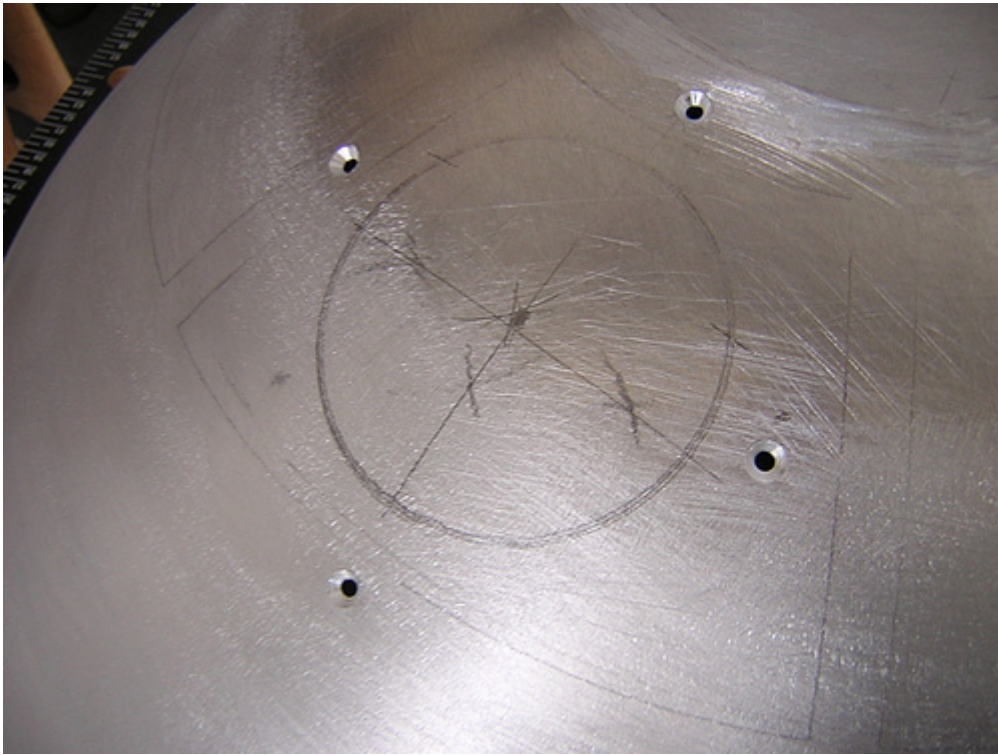
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SUNDAY, MARCH 12, 2006

## Drilled Inner Dome

I got pitifully little done today. I started drilling and countersinking holes in the inner dome, to insert screws that will point inward into the dome (Mike Senna's idea). The purpose of these screws is to provide something for dome electronics and holoprojector holders to grab onto on the inside. Inserting and JB Welding the screws now will make life easier later. (You can also see that I dusted off a little high school geometry and did a sloppy geometric construction to try to find the center of various circles.)





The reason I got so little done today is that Harbor Freight had a drill press on sale for \$39.99, so I took time out to go shopping. I've really needed a drill press for this project, so I finally got one. I should have done this on day one. Watch, now I'll hardly ever use it...



*posted by Victor Franco at 11:05 PM* 0 COMMENTS

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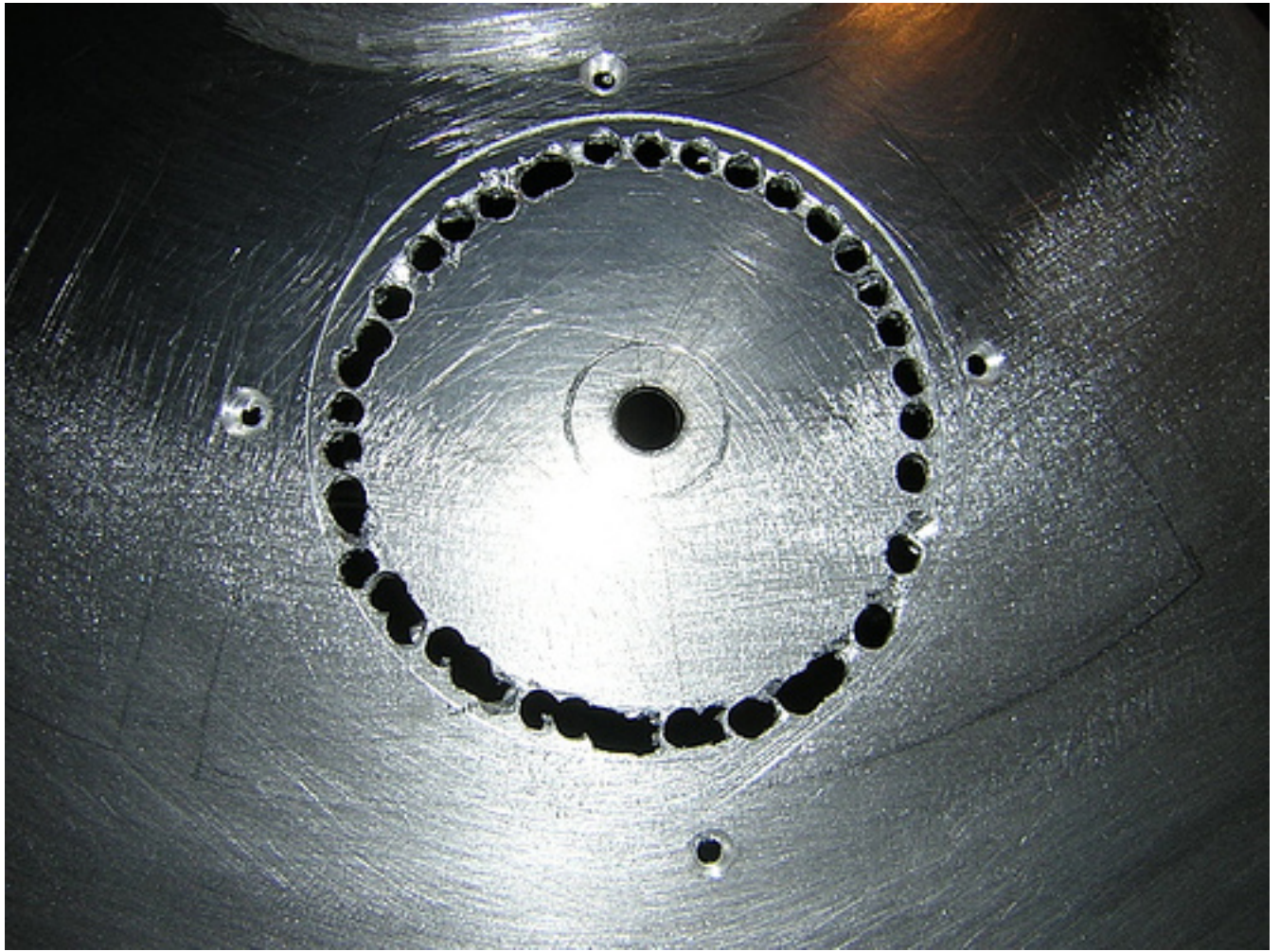
MONDAY, MARCH 13, 2006

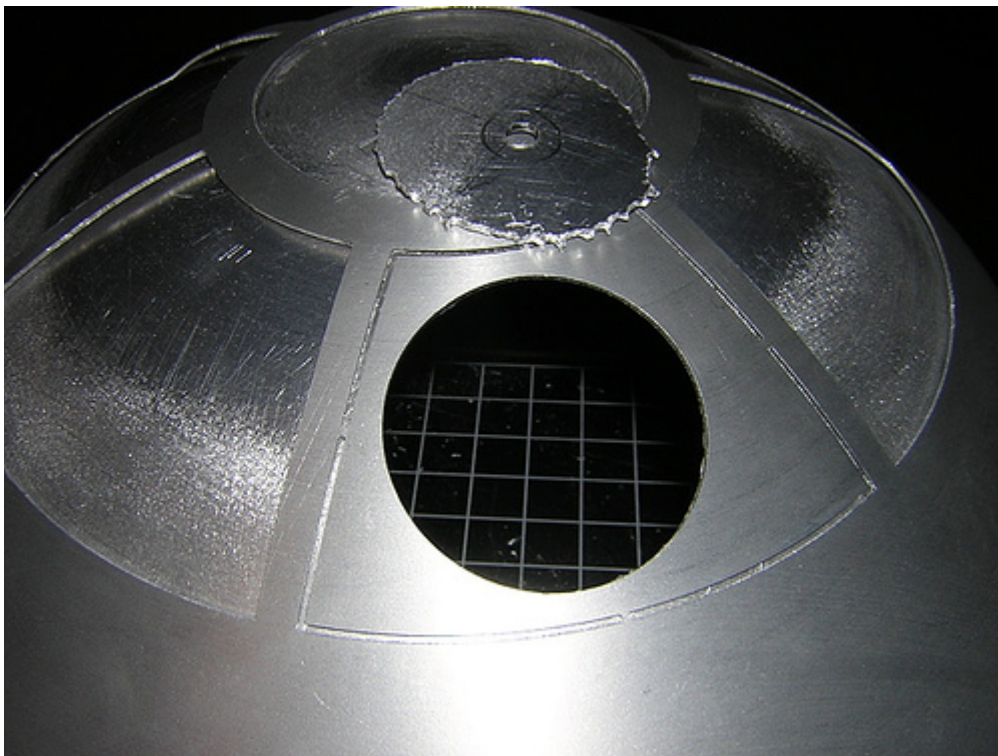
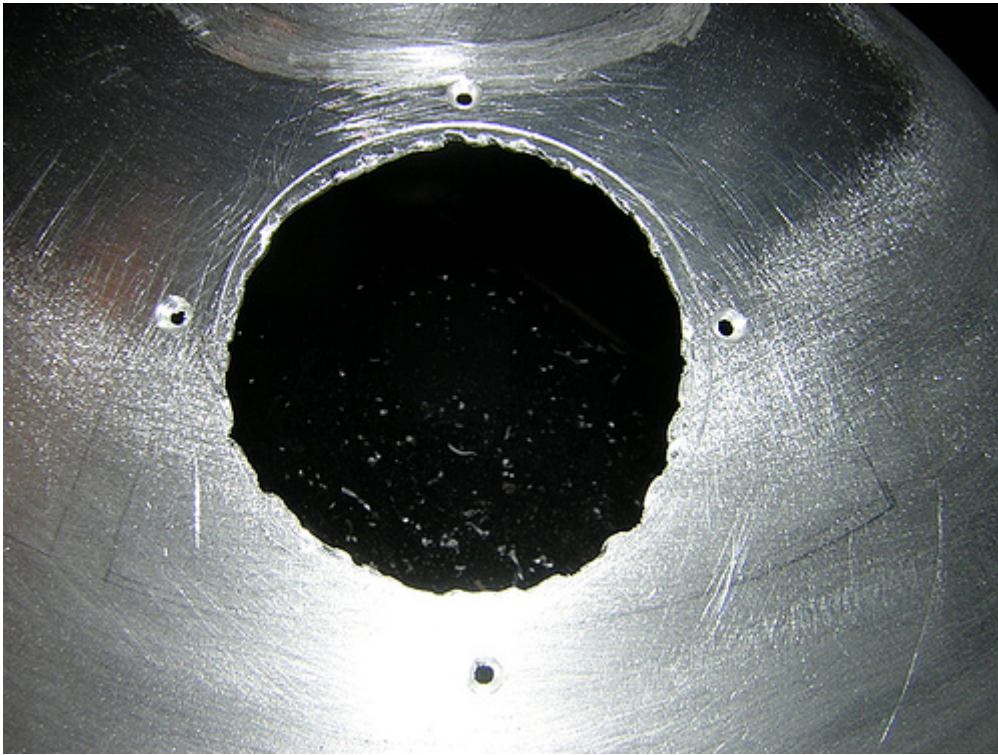
## Cut Out Top HP Hole

I cut out the top holoprojector hole in the inner dome tonight. At first I tried using a hole cutter for a drill press (twisting by hand that is, no drill), but I could see that was going to take forever. So next I turned to the brute-force method, using a drill (11/64" bit) to cut small holes around the circumference of the hole.

I'd classify this somewhere between "butcher" and "massacre." I'll come back with the Dremel later and try to smooth this out. I've already started, but obviously there's a long way to go. It appears to have had a happy ending, complete with cutout on top for a crown.







*posted by Victor Franco at 10:12 PM* 0 COMMENTS

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TUESDAY, MARCH 14, 2006

## Drilled Out Three More Holes in Dome

More drill abuse. I drilled the circumference of three more holes in the dome tonight. Not pretty, but they'll do the job. One of the upcoming inner dome circles will have to be perfect, as there is no counterpart on the outer dome. I will probably have to take a different approach on that one.

This would go a lot faster if I had a shotgun.







*posted by Victor Franco at 7:17 PM* 0 COMMENTS

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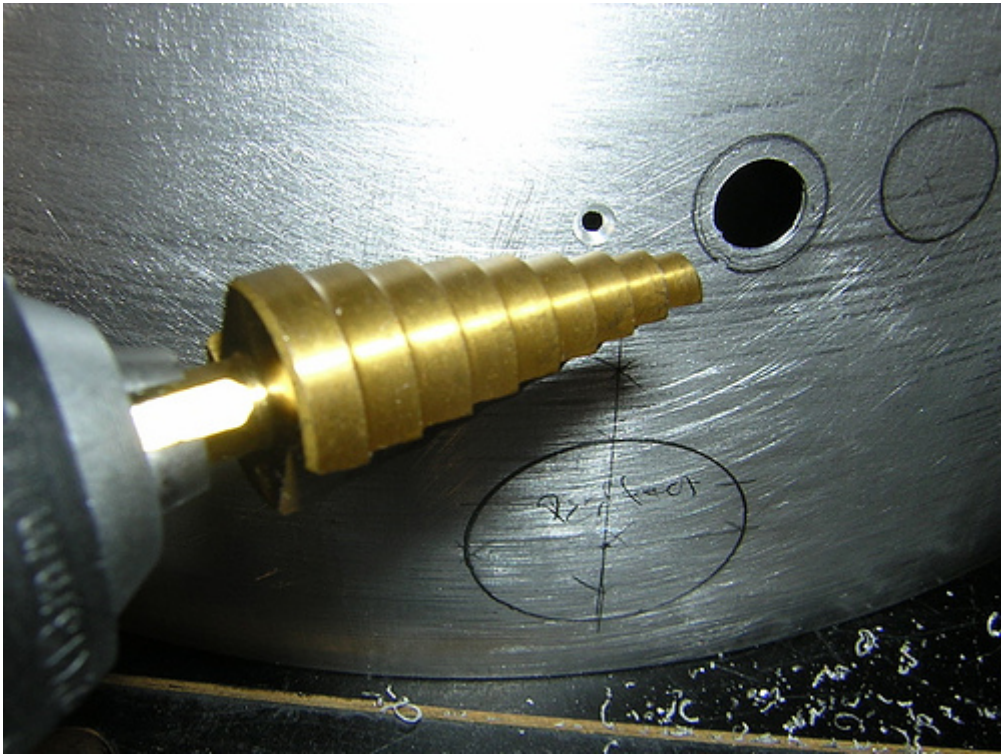
WEDNESDAY, MARCH 15, 2006

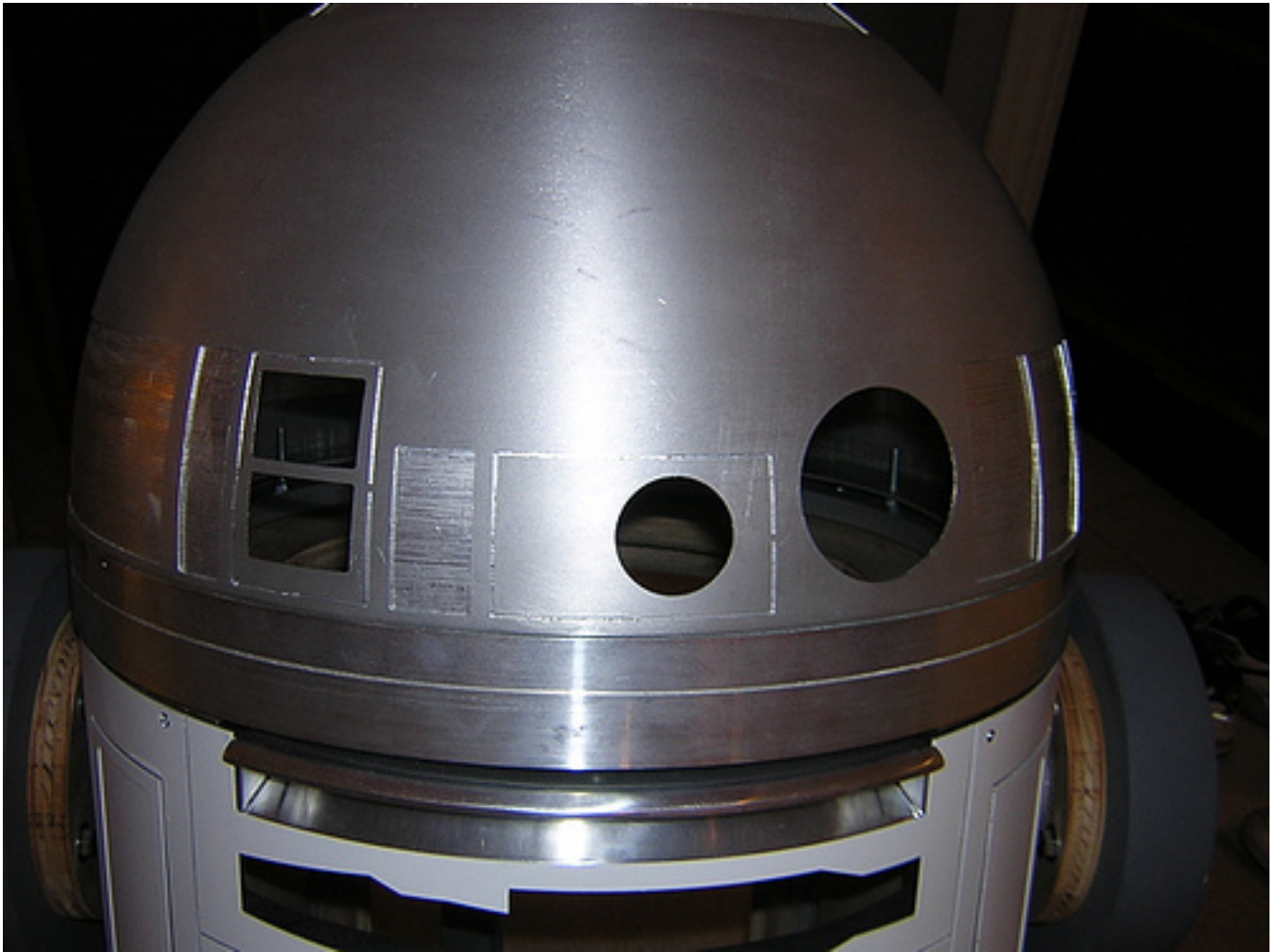
## More Dome Cuts

Tonight I cut out the two button holes with a tapered drill bit, and the rectangular holes where the LEDs show through using a Dremel with a cutoff wheel.

I'm telling you, that tapered bit is awesome! I only wish they made them in HP diameter size.

One more hole to go, the "perfect circle" that I'm stalling on. I have a carbide burr bit on order from McMaster Carr for smoothing down the rough edges, and I want to test it out on existing holes before I tackle that last hole. Mike Senna said he used a bottle neck with sand paper wrapped around it to finish his off, I'm sure I'll do the same.





*posted by Victor Franco at 7:27 PM* 0 COMMENTS

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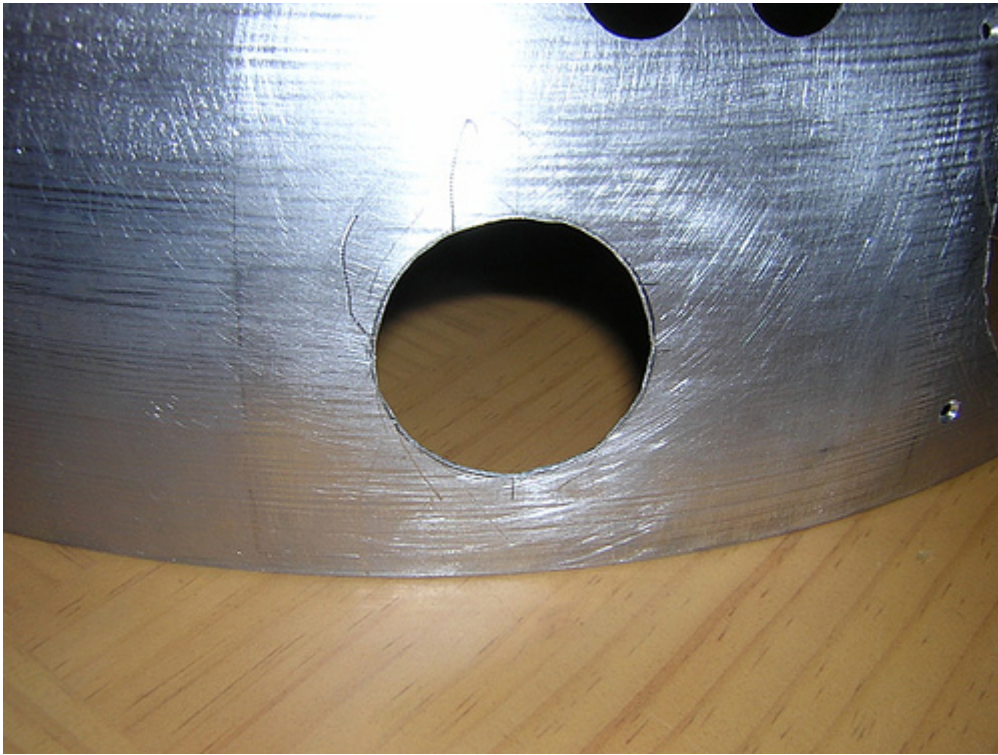
FRIDAY, MARCH 17, 2006

## **Rough Cut of "Perfect Circle"**

Well, I finally got up the courage to do a rough cut of the "perfect circle," the circle on the inner dome that shows through to the outside world. I hadn't been this anxious since I [drilled the holes](#) in the inner frame for the gas pipe connecting the arms. If I had botched this, it would have pretty much ruined my dome, so a lot was riding on it.

It turned out okay, certainly good enough that I can now start using a bottle neck with sand paper to sand it down to a round circle. Cutting out all the other circles in the dome first was good practice for this one. I'm glad that's behind me, I can breath a bit easier.





*posted by Victor Franco at 9:16 PM* [0 COMMENTS](#)

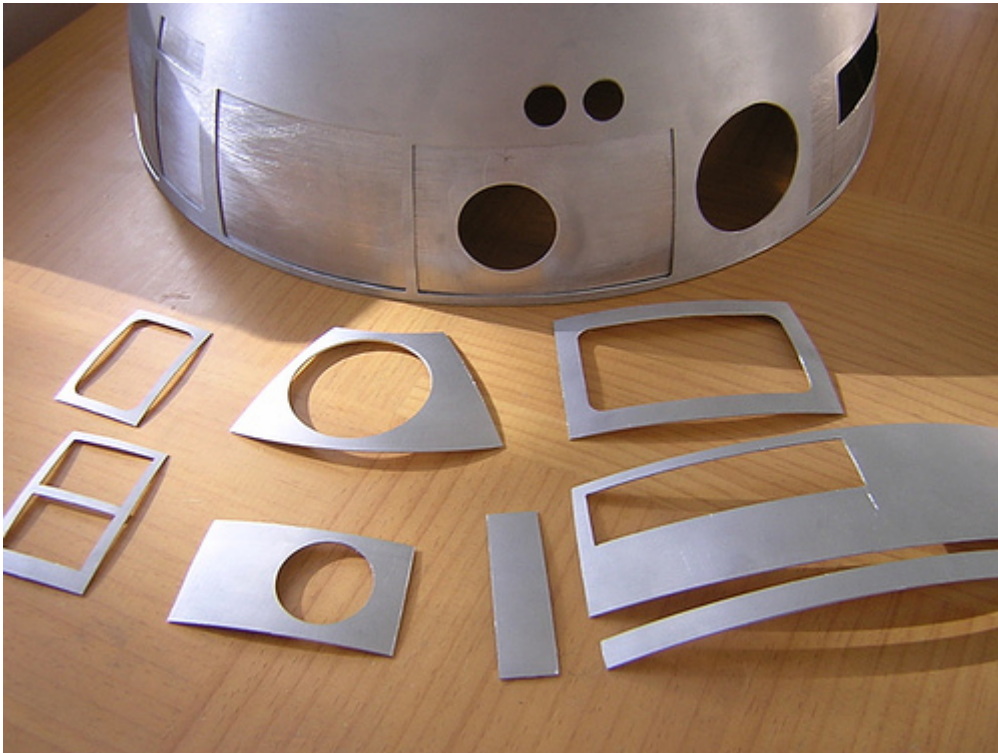
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SATURDAY, MARCH 18, 2006

## **Finished "Perfect Circle" and Rest of Dome Cutouts**

Doing the sandpaper-around-bottleneck thing, I sanded the inner dome rear PSI circle (the one that shows through to the outside world) to be about as round as I can get it. I also finished cutting out the remaining panels from the outer dome.

Next up, drilling two more holes in the inner dome for the large logic display's resin surround, JB Welding screws in place, primer for the area of the inner dome that gets painted, and another paint test or two.



*posted by Victor Franco at 7:17 PM* [0 COMMENTS](#)

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SUNDAY, MARCH 19, 2006

## Dome Drilling & Primer, Paint Test

I drilled the holes for the screws that will fasten the resin surround for the large logic display (LEDs in the back of the dome). I also widened up a bit some of the holes that I had cut earlier in the week to allow some slop for when the inner and outer domes are glued together.

Next I masked the rear PSI area (perfect circle hole) and applied three coats of primer. I also did a couple more blue paint tests, one with two coats of purple followed by two coats of blue followed by two clearcoats, the other with one coat of purple followed by one coat of blue followed by two clearcoats. I think I like the 1-1-2 combo the best, so that's what I'll probably go with for the whole droid.

*posted by Victor Franco at 8:56 PM* [0 COMMENTS](#)

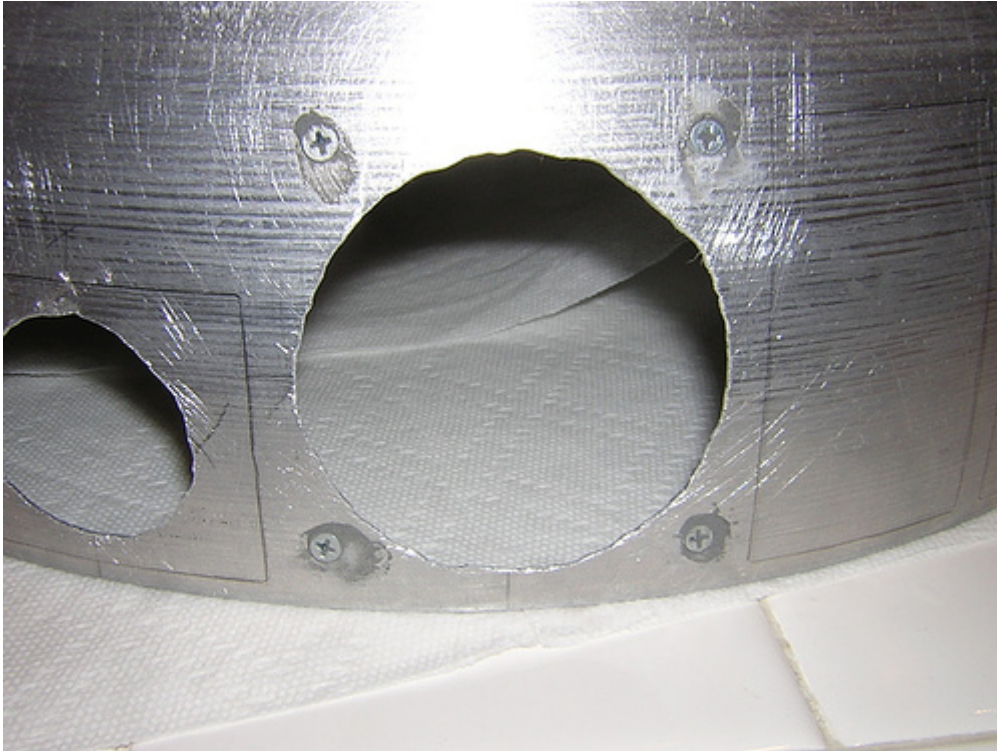
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MONDAY, MARCH 20, 2006

## JB Welded Screws in Inner Dome

Tonight I JB Welded the screws that will hold holoprojectors, a resin surround, and some dome electronics into the inner dome. There's a total of 16 screws, all

are #4-40 x 1/2".



posted by Victor Franco at 8:06 PM 0 COMMENTS

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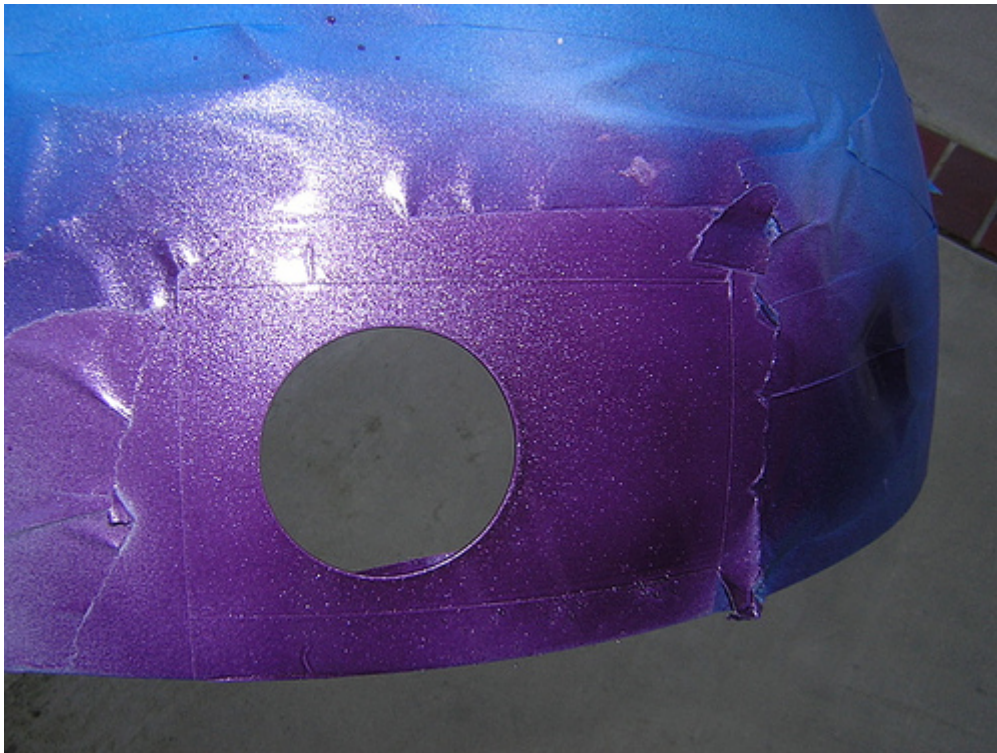
WEDNESDAY, MARCH 22, 2006

## Painted Inner Dome PSI Area

Another mini-milestone, the first blue painting of my R2. This was on the inner dome, for the area of the rear PSI that shows through to the outside world. I needed to do this before gluing the inner and outer domes together.

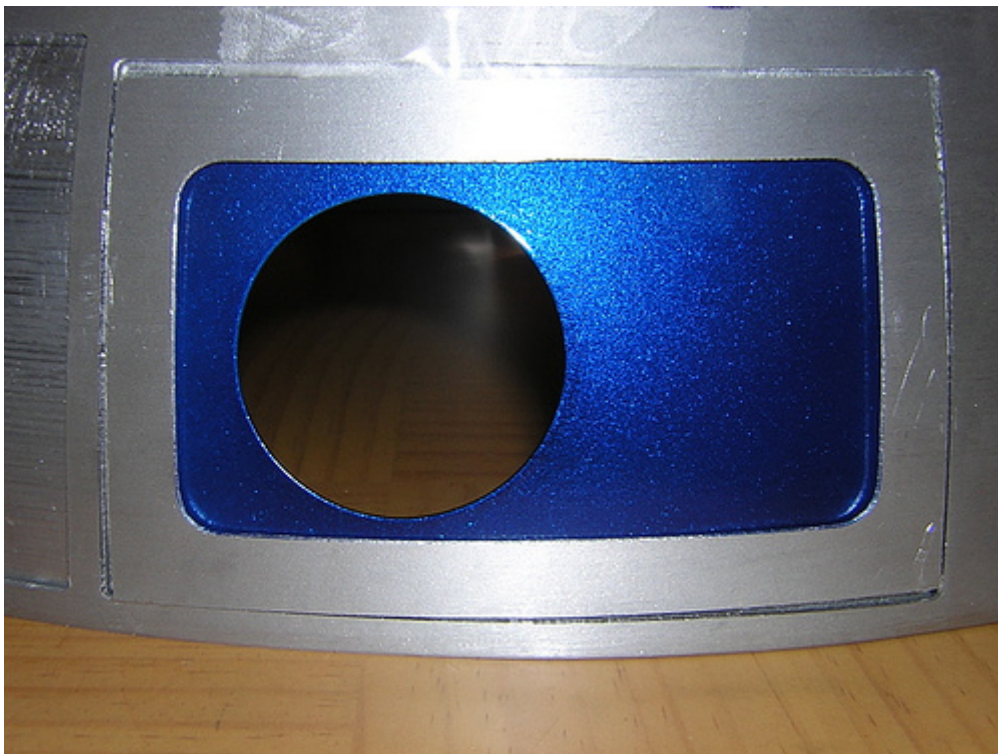
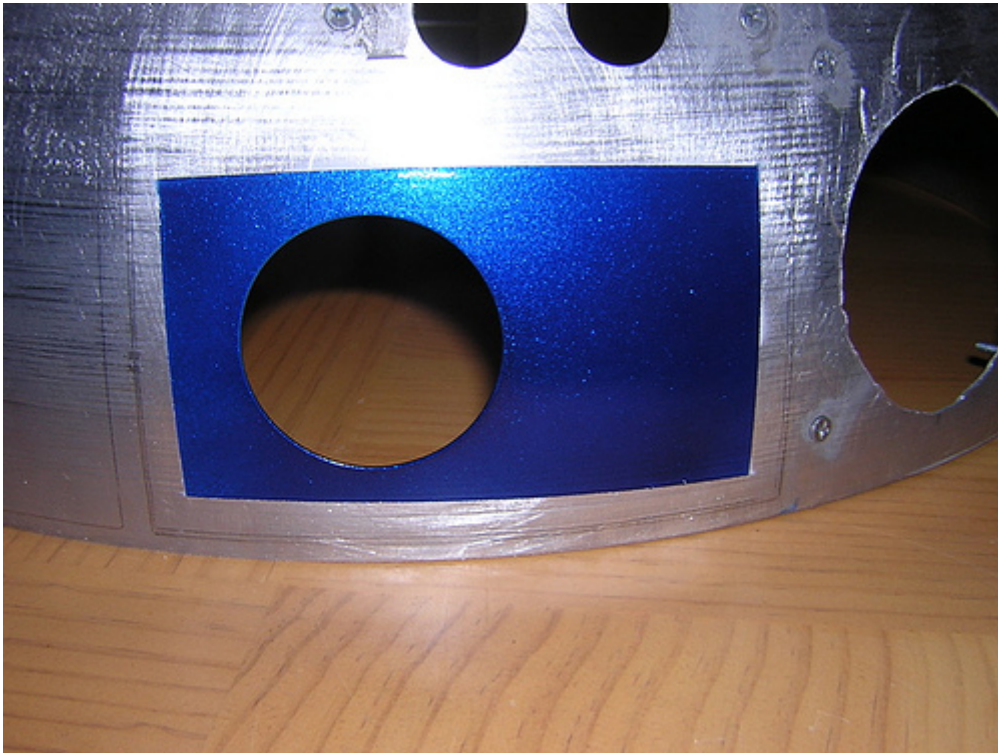
Obviously I masked the rectangular area to paint. I applied a slightly modified Krider Blue, using a few coats of primer (wet sanded with 400 grit before the last coat of primer), only one coat of Rustoleum Metallic Purple and one coat of Duplicolor Anodized Blue, followed by two clearcoats.

I love the look of the purple. You can see the glitter in the spray paint stream if you have the right light and angle as you spray it on.



After the paint had dried all day, I removed the blue masking tape. For fun I carefully set the outer dome over the inner dome, and taped in the cutout piece that will eventually be glued in place, framing the painted area.

Next up, gluing the domes together permanently with silicone.



*posted by Victor Franco at 8:46 PM* 2 COMMENTS

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THURSDAY, MARCH 23, 2006

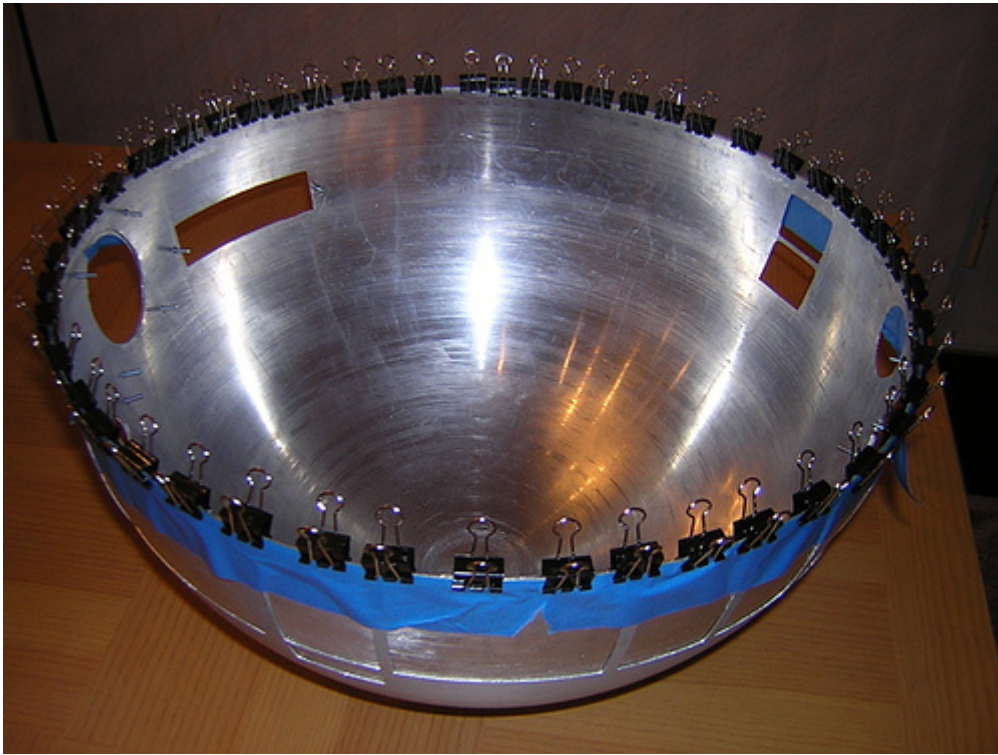
## Glued Domes Together

This morning I glued the inner and outer domes together with silicone. I just zig-zagged a bunch of silicone about midway up the dome, then smeared it around. I then carefully aligned and lowered the outer dome on top of the inner dome, kind of like when the Vader mask is first lowered onto Anakin in Revenge of the Sith. I got resourceful and used my vacuum cleaner as a pike on which to rest R2's head, so the dome layers would not fight gravity if turned upside down or left rightside up.



In the evening I went around the rim where the dome edges meet, and applied some more silicone along the ridge. I used 51 of those little clips to clip the dome edges together while the silicone dries overnight. (If you think that's bad, check out [Started JB Welding Back Door](#). I bought all those clips, and by golly, I'm gonna use 'em.)





*posted by Victor Franco at 9:21 PM* 3 COMMENTS

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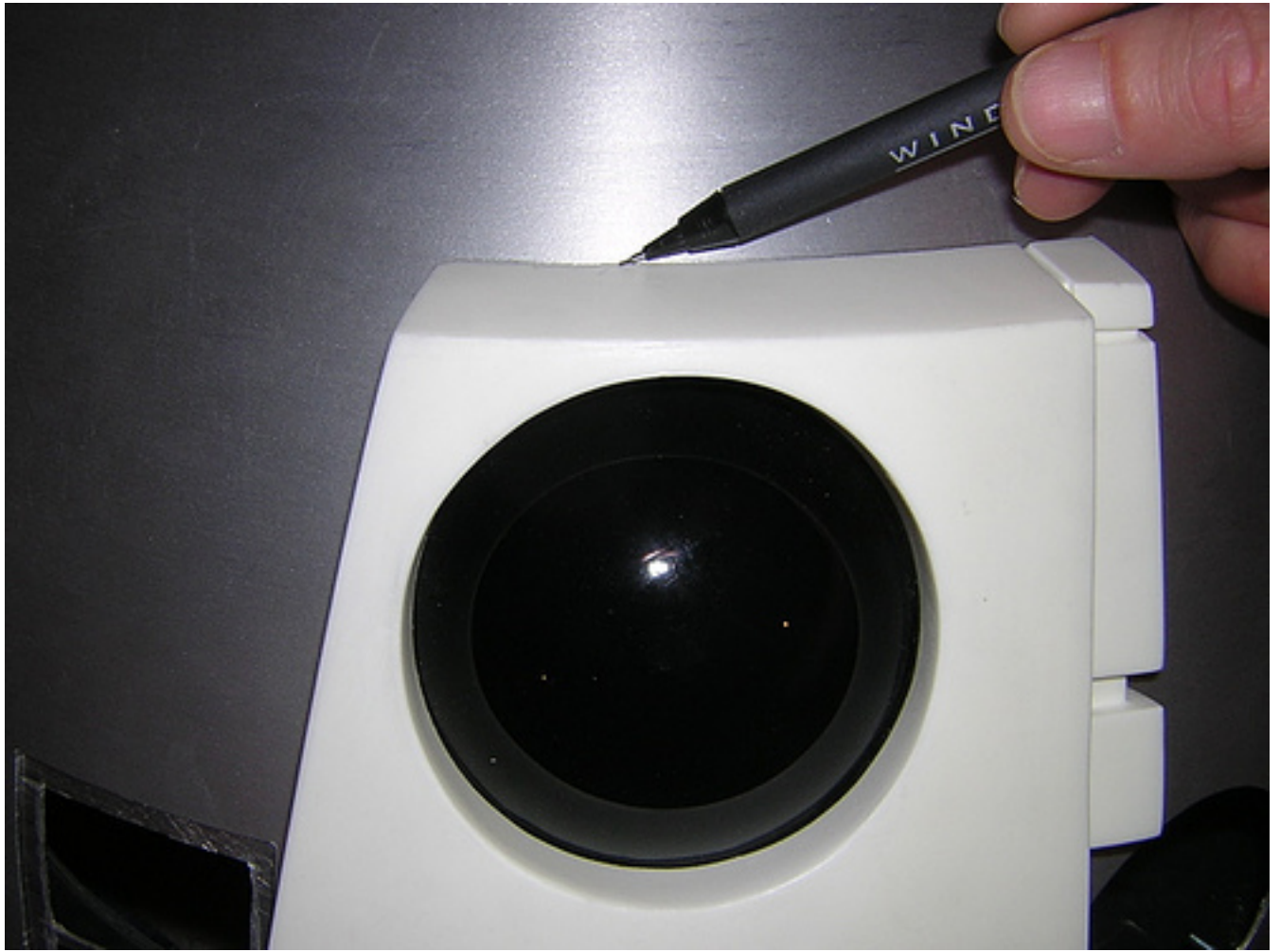
FRIDAY, MARCH 24, 2006

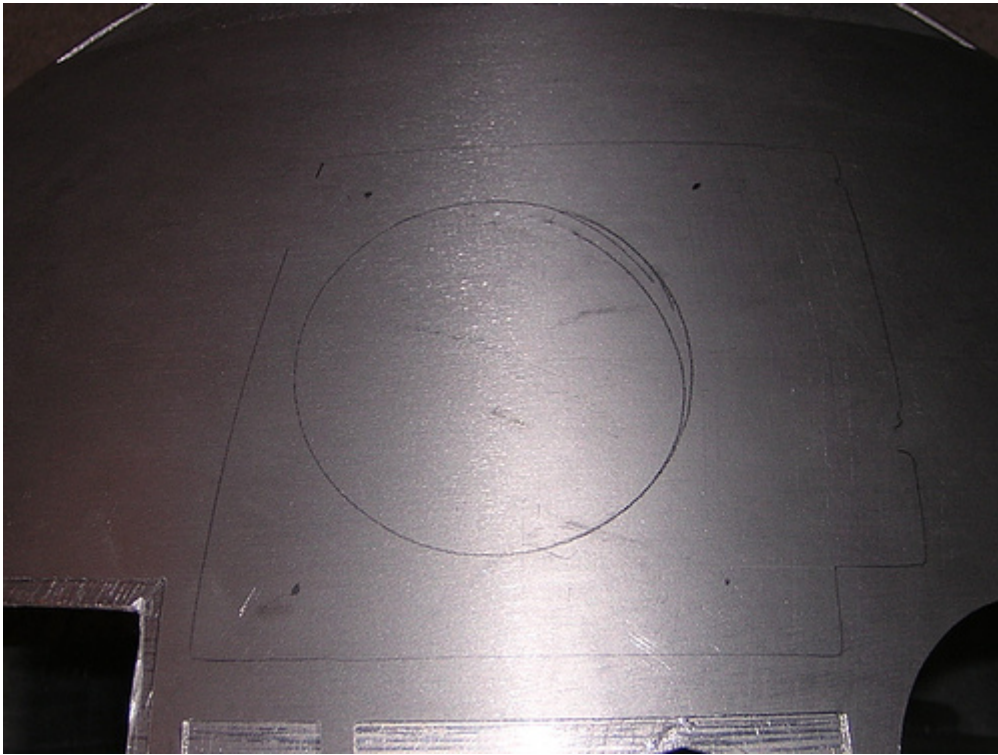
## Marked Dome for Eye Drilling

Using double-sided tape, I temporarily taped the eye to the dome where I want it to sit forever, and traced its outline. Then I marked the four spots that I will drill into the dome to support the eye.

After drilling these holes, I will tape the eye back on, and mark the four spots on the back of the resin eye that match the holes, and then drill four small parallel holes in the back of the resin eye. These holes need to be parallel to each other (rather than radial) so that the ends of the screws that will go through the dome won't all be pointing inward toward the center of the dome such that they won't be able to match the locations of the holes. Screws heads will be chopped off and the remaining screws will be glued into the back of the eye.

Not sure how soon all of this will happen, but hopefully not long from now. Lots more blue painting to take care of in the meantime.





*posted by Victor Franco at 9:55 PM* [2 COMMENTS](#)

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SATURDAY, MARCH 25, 2006

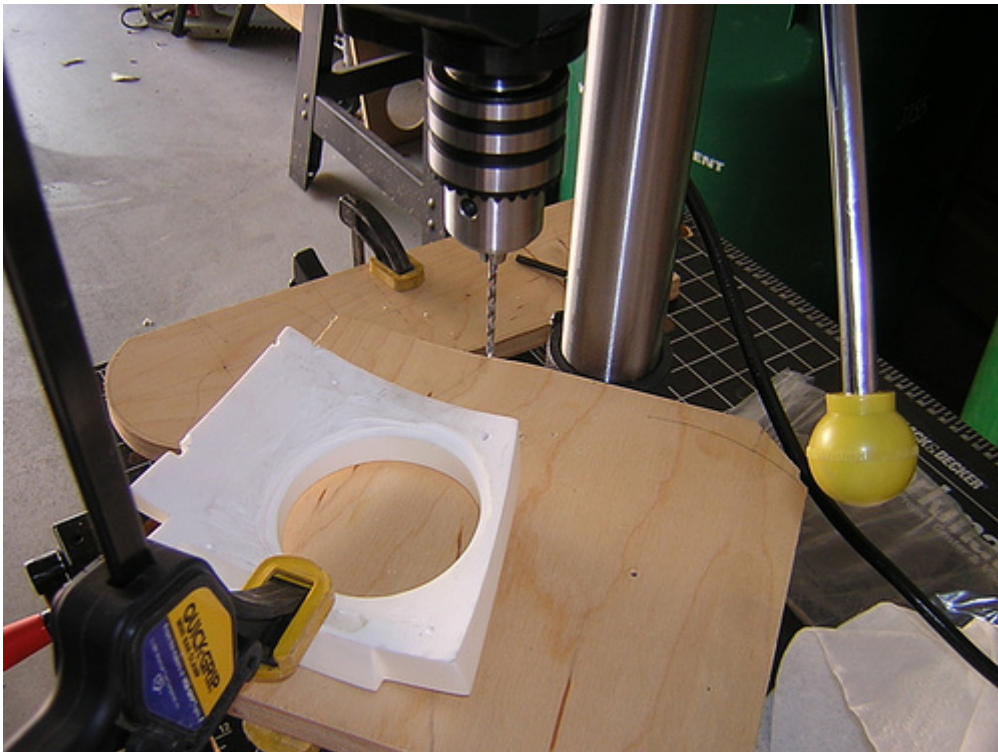
### **Attached Eye, Primed Dome Panels, Cleaned Resin**

A busy day. I finally got the (yet unpainted) eye attached temporarily to the dome. I drilled the four holes I marked yesterday (yeah, the drill bit slipped on that upper-right hole, but that's okay, the mess is behind the eye). Then I taped the eye onto the dome, and from the inside of the dome lightly touched the spinning drill bit to the back of the resin eye to make a mark for each screw hole.





Then I used my new drill press to drill the four holes in the back of the eye, about half-way deep, roughly half an inch.



I cut the ends off of four #4-40 1" screws, and used super glue to glue them into

the resin eye.



Then I gave R2 the gift of sight.



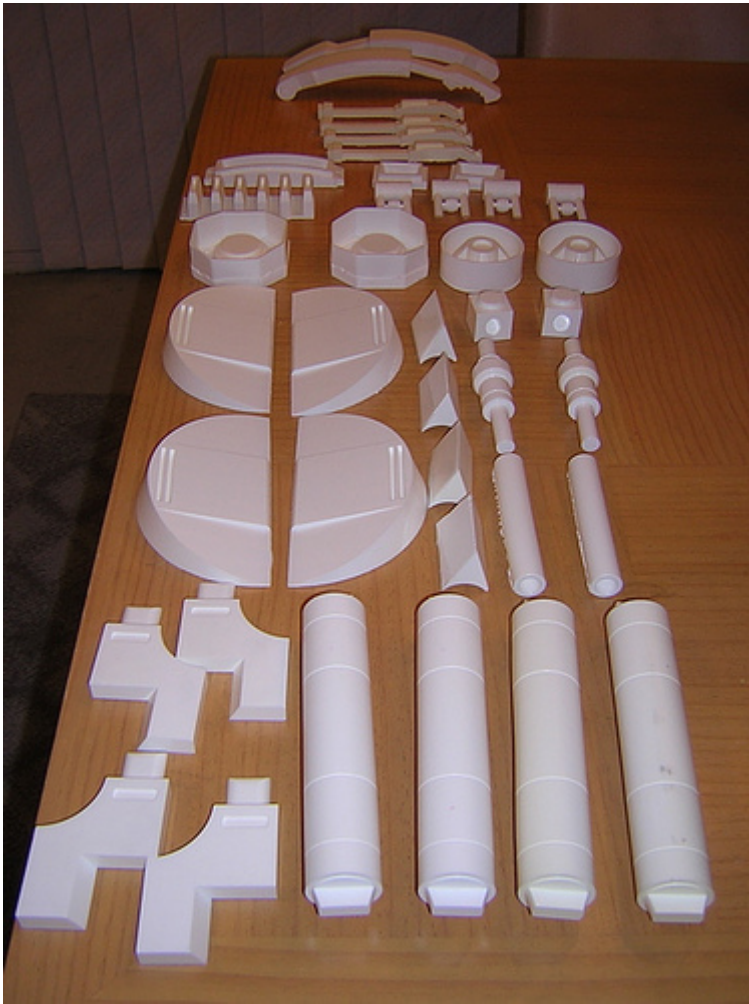


Throughout the day I worked on applying primer to all the dome cutouts that get painted, and the area of the skins that frames the front vents. (I hope I can paint them blue tomorrow, but I've got other commitments, so we'll see.)



I finished the day by following Dark Jedi Keith's [instructions on cleaning resin](#), and cleaned over 40 resin parts (a couple not shown). I foresee some painting soon, so it was time to prep them. Not all will be used, as I have some aluminum on order, but I figured I'd wash everything anyway, rather than trying to remember what has been cleaned and what hasn't.





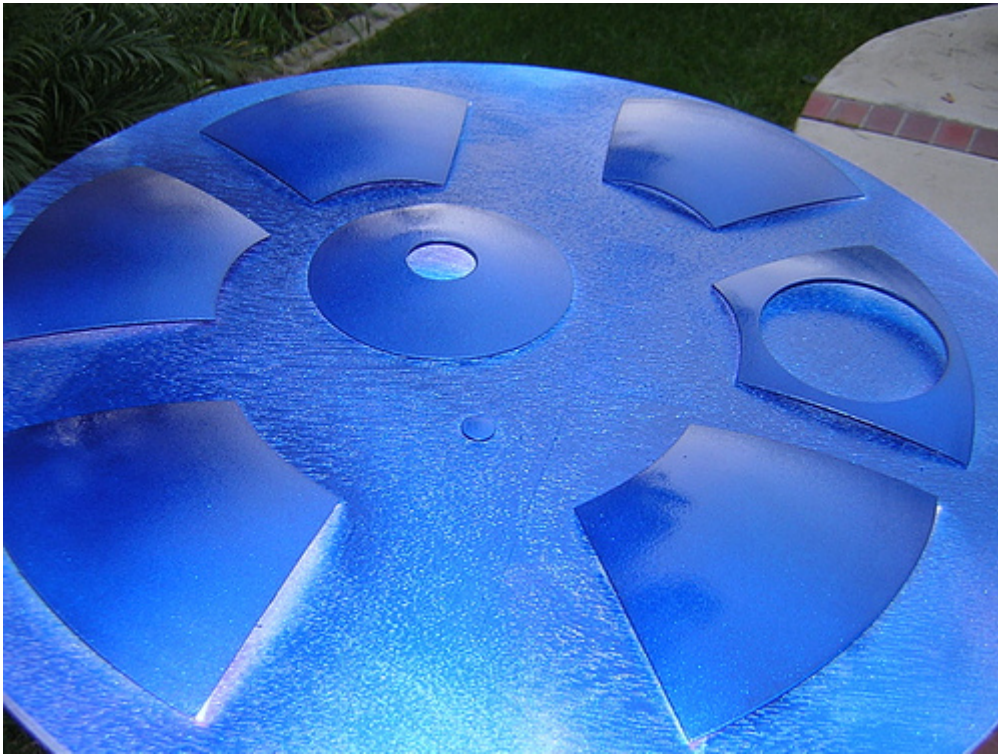
*posted by Victor Franco at 8:16 PM* 0 COMMENTS

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SUNDAY, MARCH 26, 2006

## Painted Dome Panels

I painted the dome panels (both side and top) today. I also painted the eye, but something went wrong and the paint started to peel from the primer, so I stripped all the paint off and I will have to try again another day. Oh well.



*posted by Victor Franco at 8:47 PM* 2 COMMENTS

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TUESDAY, MARCH 28, 2006

## **Cleaned Up Eye, Marked Dome Panel Holes for Drilling**

In the morning I cleaned up the remaining paint and primer off the resin eye, at least everything that I could reach. I'll probably try painting it again this weekend, along with the dome ring.

In the evening I marked the inner dome for drilling small holes under the painted dome panels, so that I can pop the panels off from behind, if I ever need to repaint them. I plan to bond most of the panels to the dome with 3M Very High Bond Tape, which I ordered today from McMaster-Carr (and it ain't cheap).



Here's a picture from yesterday, before I finished cleaning up the eye, with the dome panels temporarily taped in place. I always have to jump ahead and take a sneak peek at things like this. The flash did a poor job of lighting the panels.





*posted by Victor Franco at 8:52 PM* [3 COMMENTS](#)

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WEDNESDAY, MARCH 29, 2006

### Primered Eye, Marked Dome Ring

This morning I applied primer to the resin eye in preparation for (re)painting. I'll apply another coat of primer, lightly sand, and apply a final coat of primer tomorrow.

I also marked a few areas of the dome ring which will need to be trimmed a bit, to better accommodate things like holoprojectors and processor status indicator lights.

*posted by Victor Franco at 9:30 PM* [0 COMMENTS](#)

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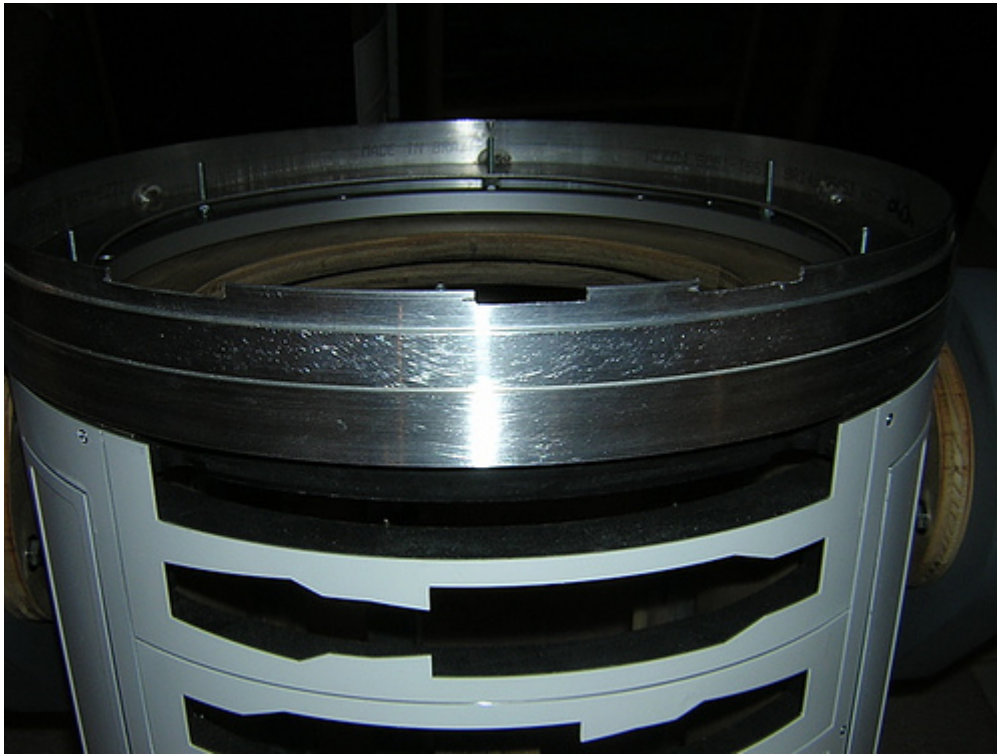
THURSDAY, MARCH 30, 2006

### More Eye Primer, Dome Ring Work, Redid LDP

This morning I added another coat of primer to the eye, lightly sanded, and then added a final coat.

In the evening I took three bites out of the top of the dome ring, using the Dremel. These areas will provide clearance for the front holoprojector, PSI and

logic display. I also spun the ring around on the bearing and lightly sanded the bottom half of the ring with 220 grit sandpaper to give it a brushed-metal look. (Yet another idea borrowed from Mike Senna.)



Lastly, I (purposefully) busted apart my [aluminum large data port](#), because it seemed slightly lopsided to me. So I rebonded it with JB Qwik, and hopefully it will look more even now.

*posted by Victor Franco at 10:06 PM* [0 COMMENTS](#)

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FRIDAY, MARCH 31, 2006

## Painted Eye

I repainted the resin eye after my first failed attempt (paint started peeling). This time seems to have gone somewhat better, but I won't feel confident that the paint won't peel again until more time has passed.



*posted by Victor Franco at 10:38 PM* 0 COMMENTS

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SATURDAY, APRIL 01, 2006

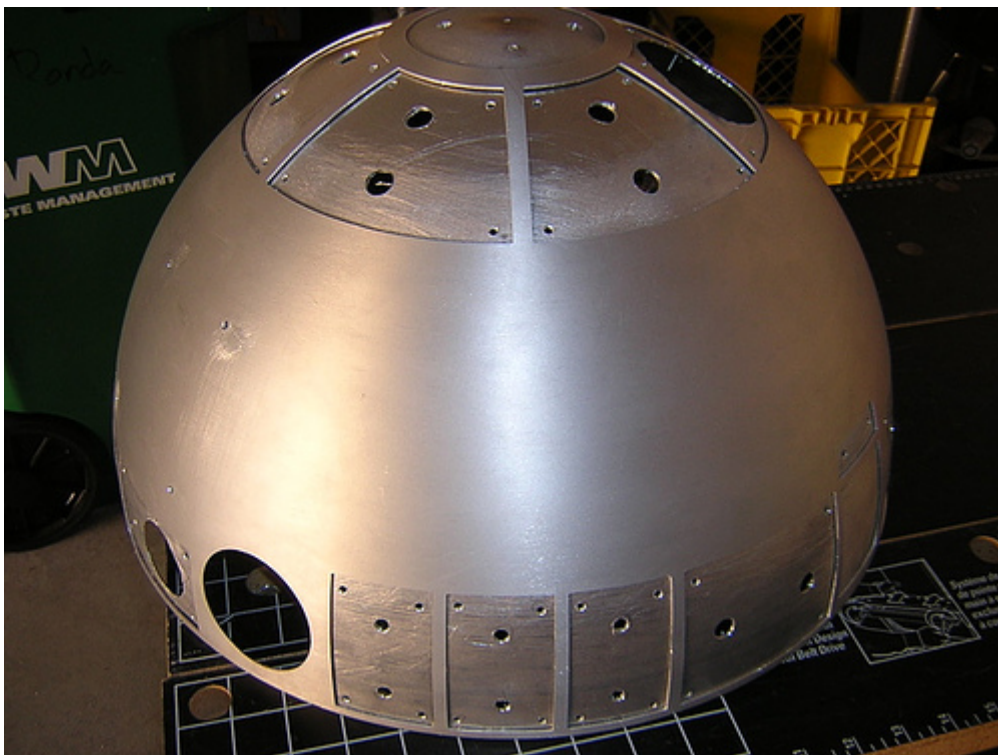
## **Primed Dome Ring, Drilled Dome Panel Holes**

In preparation for painting the top half of the dome ring, I applied a couple of coats of primer, lightly sanded with 400 grit sandpaper, and then added another coat of primer. I'll do the blue tomorrow.





Next I plugged R2's head full of holes, sixty-nine to be exact, underneath where the panels will go. These holes will facilitate removal of the panels in the future should I ever need to repaint them.



*posted by Victor Franco at 11:00 PM* 2 COMMENTS

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## Giving Up

I woke up this morning and asked myself, "What are you doing? You're a grown adult, and here you are making a huge, expensive toy!" My friends think I'm crazy, my coworkers can't understand why I come in late and leave early, and the neighbors hate me for the noise I make with the power tools.

The time, energy and money spent on this could be going toward so many other things. I don't need the stress anymore. I want this thing out of my sight so I can just forget about it. And the daily blog updates? What am I, nuts?

Phew. With that out of the way, all that's left to say is....

APRIL FOOLS!!!!

Sorry, I just had to do that. More updates later. ;)

*posted by Victor Franco at 11:49 AM* 0 COMMENTS

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SUNDAY, APRIL 02, 2006

## Painted Dome Ring & Large Data Port

I painted the dome ring and large data port today. The dome ring still has the masking tape on the top and bottom, so it's hard tell what got painted. I'll take the tape off tomorrow and take another sneak-peek at everything put together again.



*posted by Victor Franco at 5:24 PM* 0 COMMENTS

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MONDAY, APRIL 03, 2006

## Applied Foil Tape to Eye, Battery Boxes Arrive

Now that the paint is dry on the dome ring and large data port, I was able to place them back on the droid.

I finished up the radar eye tonight by using an Xacto knife to cut some thin strips of foil tape and applying them to the grooves in the radar eye.



Craig's awesome PVC battery boxes arrived today. There's no way I would have been able to make these myself.



*posted by Victor Franco at 9:35 PM* [2 COMMENTS](#)

## One Year Ago Today...

Today marks the one-year anniversary of when I unsuspectingly went to Walmart to check out the Episode III Star Wars goodies. Who happened to be there, but none-other than R2-D2 (along with his associate, Mike Senna). Little did I know I was about to acquire a new hobby that was to keep me busy for the foreseeable future.

I actually didn't start building until July 2, 2005, but this got me going.

See [How it Started](#).



*posted by Victor Franco at 7:24 AM* 0 COMMENTS

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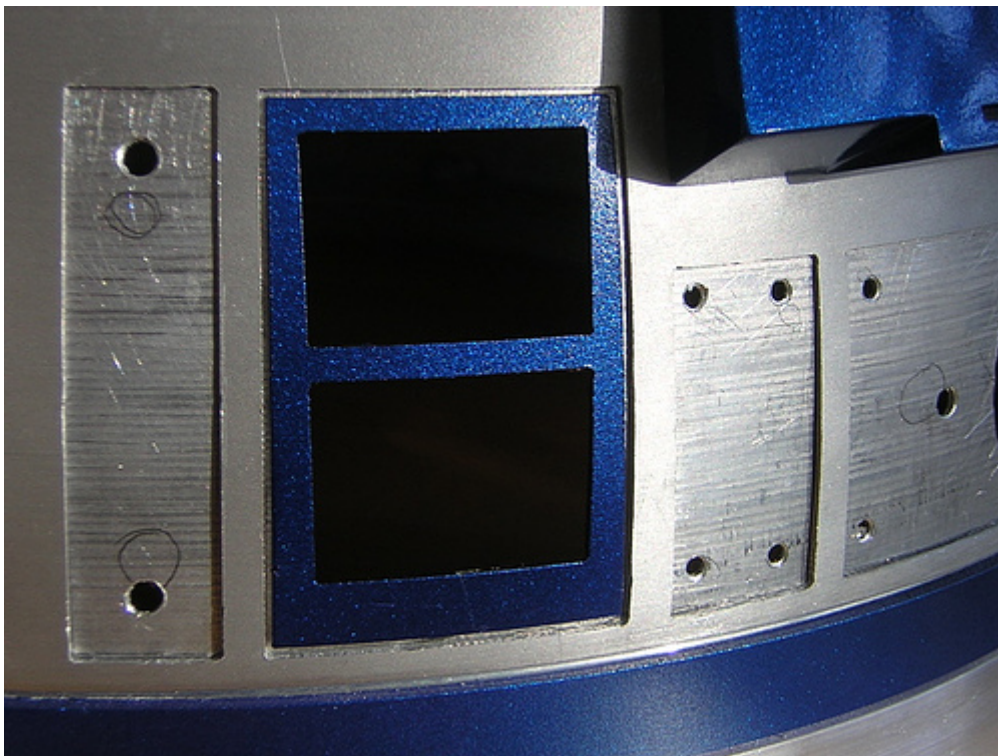
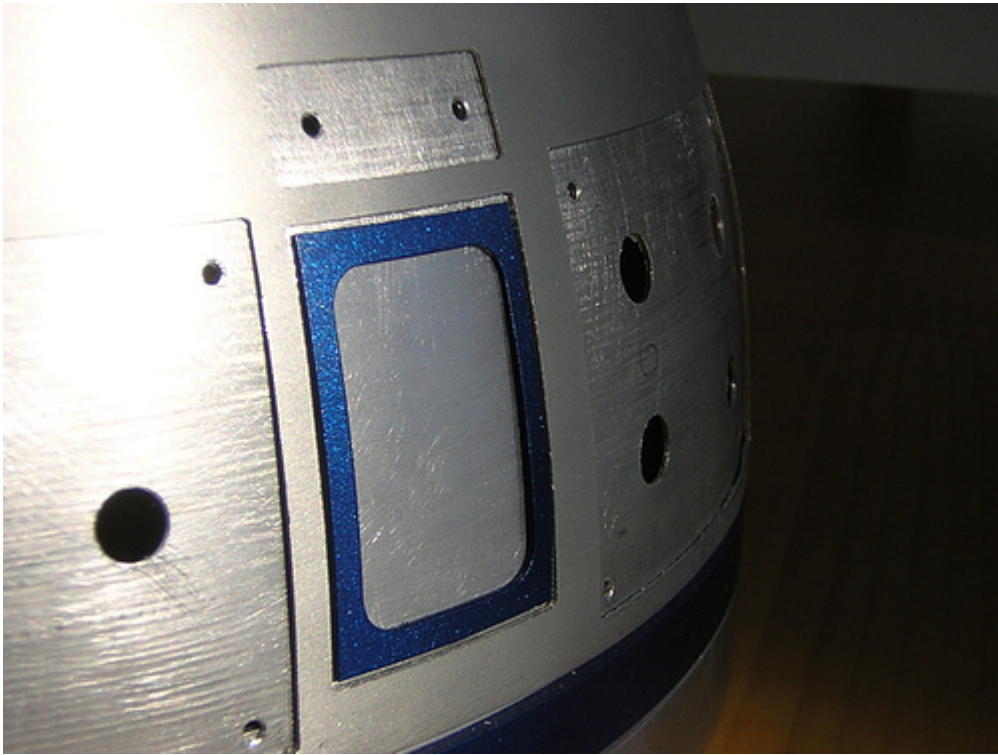
WEDNESDAY, APRIL 05, 2006

## **Attached First Two Dome Panels with Silicone**

This morning I applied silicone to the corners of two of the dome panels and glued them onto the dome. I used the blue tape to hold them in place during the day while the silicone dried, and in the evening removed the tape.

I used silicone for these two panels because there isn't enough room for them to be backed with the double-sided tape I plan to use for the other panels. I'm still waiting for my 5 mil tape to arrive, so until it does I can't do a whole lot more to the dome at the moment.





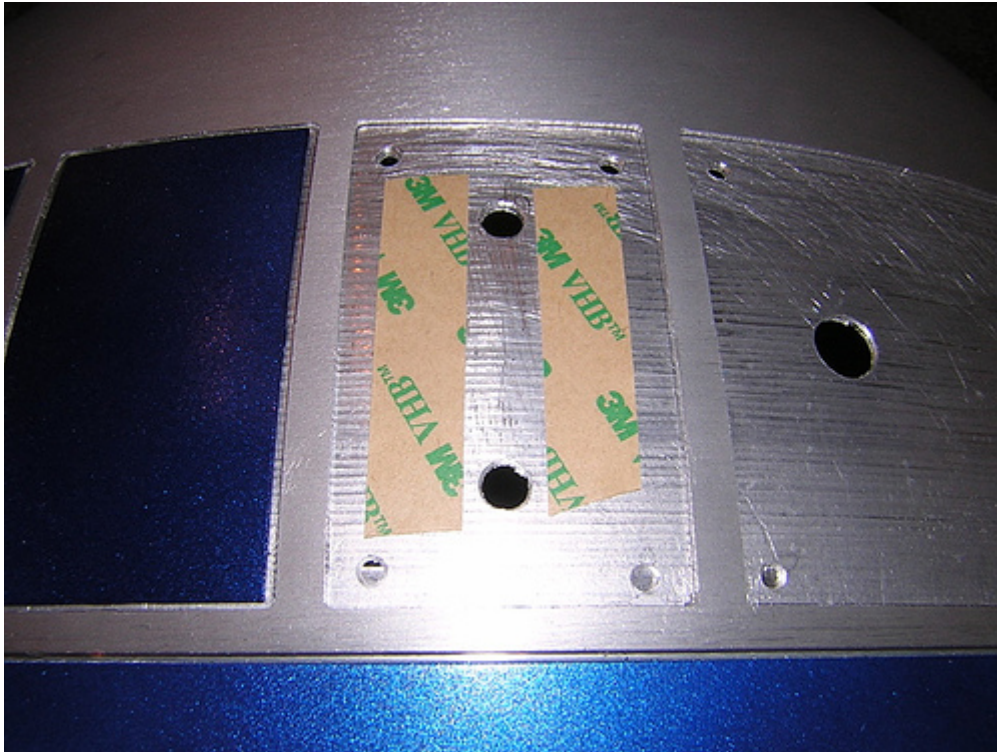
*posted by Victor Franco at 10:44 PM* 4 COMMENTS

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FRIDAY, APRIL 07, 2006

## Attached Rest of Panels to Dome

Tonight I affixed all of R2's remaining dome panels to the dome. All but the very top two small pieces were attached with 3M Very High Bond Tape (5 mils x 1/2", clear), the other two were attached with silicone.



Once the side panels were done but before the pie panels up top were on, R2 truly looked like a "chrome-dome."





It took quite a while, but finally Phase 1 of the dome build is just about done. All that remains is to secure the eye lens to the eye with silicone. Phase 2 will involve the dome electronics and holoprojectors. I'm not sure when I'll get to those, I will probably get back to work on the legs next.





*posted by Victor Franco at 11:51 PM* 2 COMMENTS

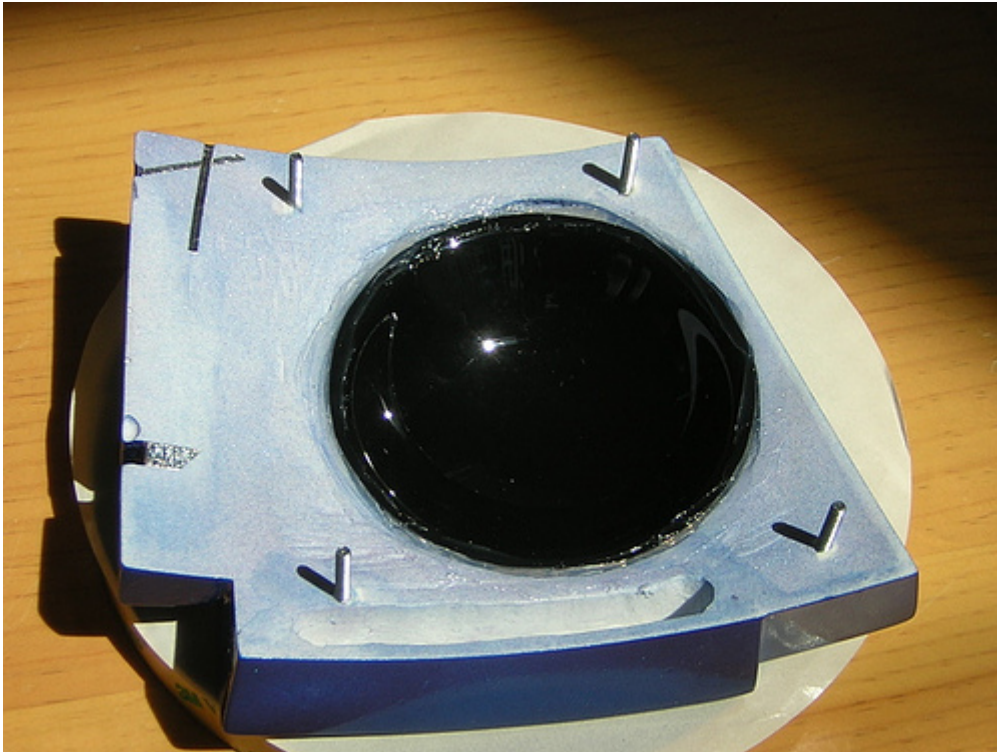
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SUNDAY, APRIL 09, 2006

## Glued Lens Into Eye, Dome Phase I Done

Today I used silicone to glue the acrylic lens into the eye socket, thus completing phase one of the dome build. Yea!

(You can see excess foil tape at the upper- and middle-right. I left it there to make it easier to peel off in the future.)



Here's what I have to show for myself thus far. A long, long way to go.



*posted by Victor Franco at 10:39 PM* 0 COMMENTS

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WEDNESDAY, APRIL 12, 2006

## Strategizing

I never like to post without having some progress to show, although I do it occasionally, and this is one of those.

Right now I'm thinking about what to do with the legs. I have PVC horseshoes (layered shoulders), but I'm planning on making my own MDF horseshoes instead, using the PVC as a backup in case I'm unsuccessful. I am going to try using the PVC as a template for routing, and make a "proper" horseshoe template out of MDF for the various layer sizes (shim layer, big layers and small layers). Then, with that template, I'll make the rest of the horseshoe layers out of MDF and glue them together.

Why would I do this? Mainly because I did a very poor job of gluing together the

PVC horseshoe layers, and they are coming apart. I'm confident that won't happen with MDF and wood glue. Plus I think I can do a better job with MDF in hiding the layers along the outer edge of the horseshoes, using wood putty, like I did on the legs.

This whole idea may be a big mistake, maybe not. Either way, I probably can't work on it until the weekend. So that's what's going on.

*posted by Victor Franco at 3:07 PM* [4 COMMENTS](#)

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FRIDAY, APRIL 14, 2006

## Marked MDF for Horseshoe Templates

Well, it isn't much, but at least I did something related to building. I started marking outlines on MDF for building my layered shoulder ("horseshoe") template, for cutting tomorrow.

Because I want the non-shim layers of the horseshoes to match the existing legs, I used the leg template to mark the outer outline of the horseshoe template. I will use the existing PVC horseshoes to mark the inner part of the horseshoe template.



*posted by Victor Franco at 9:37 PM* [0 COMMENTS](#)

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SATURDAY, APRIL 15, 2006

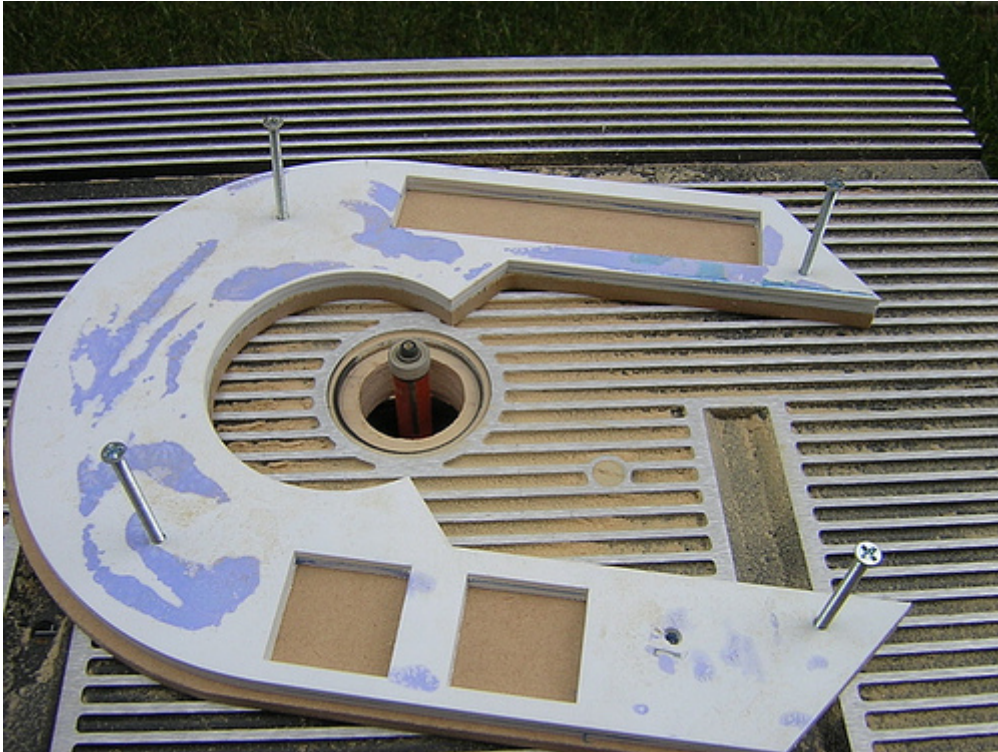
## Started Cutting Horseshoe Layers

I'm finally back to building. Today I started cutting horseshoe layers from 1/8" MDF.

First, I had to make a 1/4" master template for both the large and small horseshoe layers. I did this in two phases. First, for the outside perimeter of the horseshoes, I used my original leg template that I hadn't touched since last summer. I used this template so that the outer perimeter of the horseshoes would perfectly match the shoulder area of the legs that are already built from the same template.



Next, I needed to form the inner perimeter of the horseshoe template. This was done using the PVC horseshoes that I purchased from Alex and Andy. Note that the outer perimeter of the PVC horseshoes are not an exact match of the legs, due to differences in the way they were made, otherwise I would have used the PVC horseshoe for the whole template.



Using these new MDF templates, I knocked out four small and four large horseshoe layers, enough for one leg (kind of, one of the small layers needs to be cut a bit more to serve as the shim layer against the leg). I traced outlines onto the MDF, rough-cut them with a jigsaw, and routed them down to size using the pattern cutting bit.





Finally, I cut the holes in the template for the shoulder buttons and hydraulics, and stacked the layers to see how they looked. This turned out a lot better than I was guessing it would. A little wood putty and sanding, and I think they just might work!





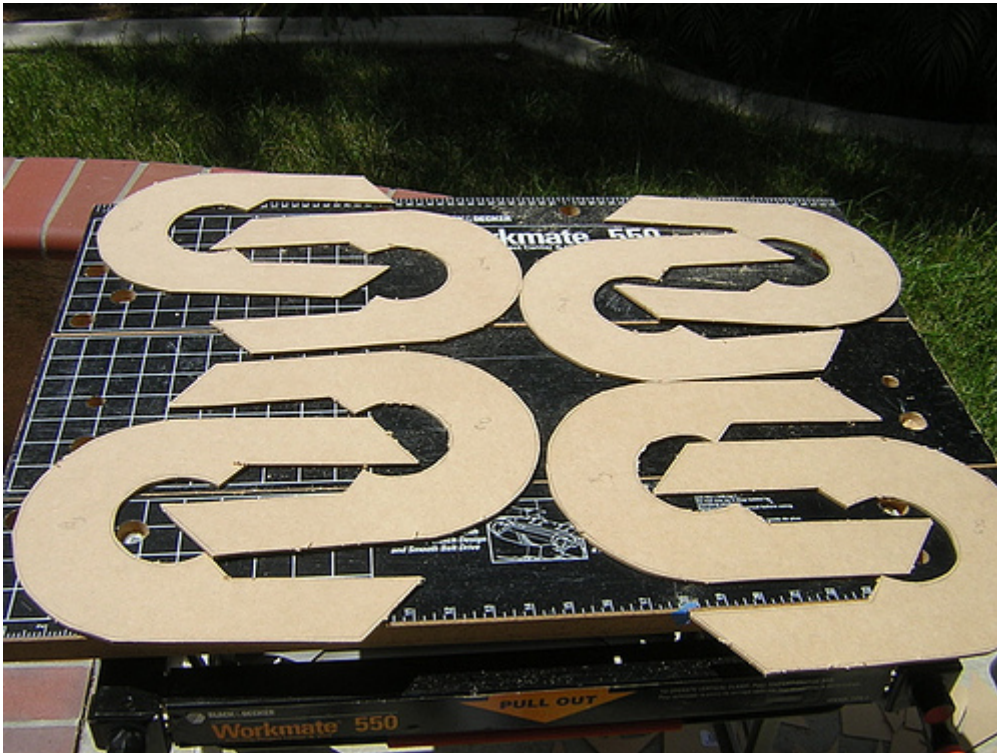
*posted by Victor Franco at 11:09 PM* 0 COMMENTS

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SUNDAY, APRIL 16, 2006

## Finished Cutting Horseshoe Layers

Another busy day. First, I rough-cut eight more horseshoe layers.



After routing the horseshoes down to size with my MDF templates, I rough-cut the holes for the shoulder hydraulics and buttons. This was a pain, as there's not much room to work the jigsaw.



Then I used the router to route the holes in the top layer (only) to size. The reason I only routed the top layer holes to size and left the other four layers below it rough-cut is that I'm going to glue them together first. Then I'll route the five layers glued together, using the top layer as the template. Routing each layer individually would run the risk of a mismatch from layer to layer.



It was a busy weekend, 20 layers cut in total. Four of the cutouts are templates. Two templates are for the big layer, and are mirror images of each other to allow for buttons and hydraulics to be symmetrical on both legs. One template is for the small layer, and the fourth template is for the shim layer, which I don't think I'm going to end up using. I'm not sure yet exactly how I'm going to finish the shim layer, I may end up hand-sanding the edge of the bottom-most small layer.





Next up, gluing some of the layers together.



posted by Victor Franco at 5:50 PM 2 COMMENTS

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MONDAY, APRIL 17, 2006

## Recut Horseshoe

One of the horseshoe layers that I made yesterday had a small break in it from pounding on it too hard with the jigsaw, so I cut a replacement this evening. I also bought some goodies at Home Depot and Lowe's tonight for aligning the layers for glue-up.

*posted by Victor Franco at 9:52 PM* 0 COMMENTS

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TUESDAY, APRIL 18, 2006

## Made Horseshoe Alignment Jig

I made the world's ugliest jig today to align the horseshoe layers, for when I glue them up. Obviously I want them aligned as much as possible, so I took some old scrap from my temporary feet, screwed down some more scrap wood as a frame around the horseshoes (screws coming up from the bottom into the frame siding), and voila, an ugly horseshoe frame. The horseshoes do fit in nice and snug, so this should do the job.

I'm going to use the drill press to drill four mouting holes through the stack of horseshoe layers, and then put 1/8" diameter vertical pegs into the bottom of the jig and stack the layers, with the pegs securing them in place. Then I can glue various layers without worrying about them sliding around when I clamp them.



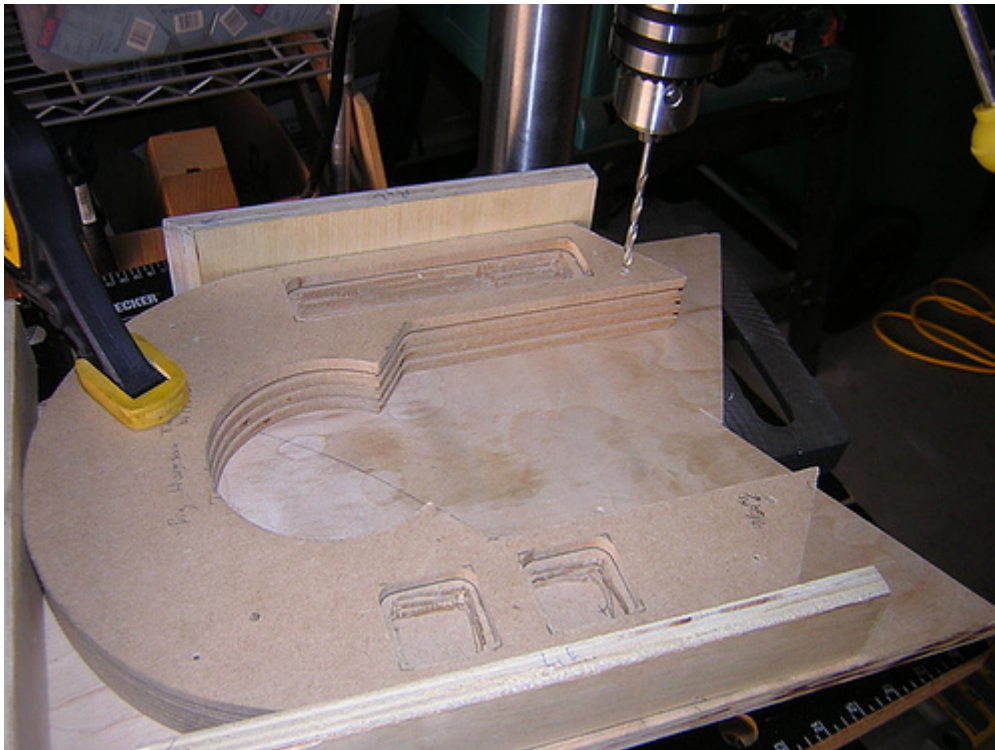
*posted by Victor Franco at 10:31 PM* 0 COMMENTS

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WEDNESDAY, APRIL 19, 2006

## Started Gluing Horseshoe Layers

Before I could start gluing the horseshoe layers, I needed to drill four holes through all layers, except for the top layer, to accommodate the pegs on which I planned to stack them. For the top layer, I drilled a hole half way deep from the back, so as not to mar the outer surface.



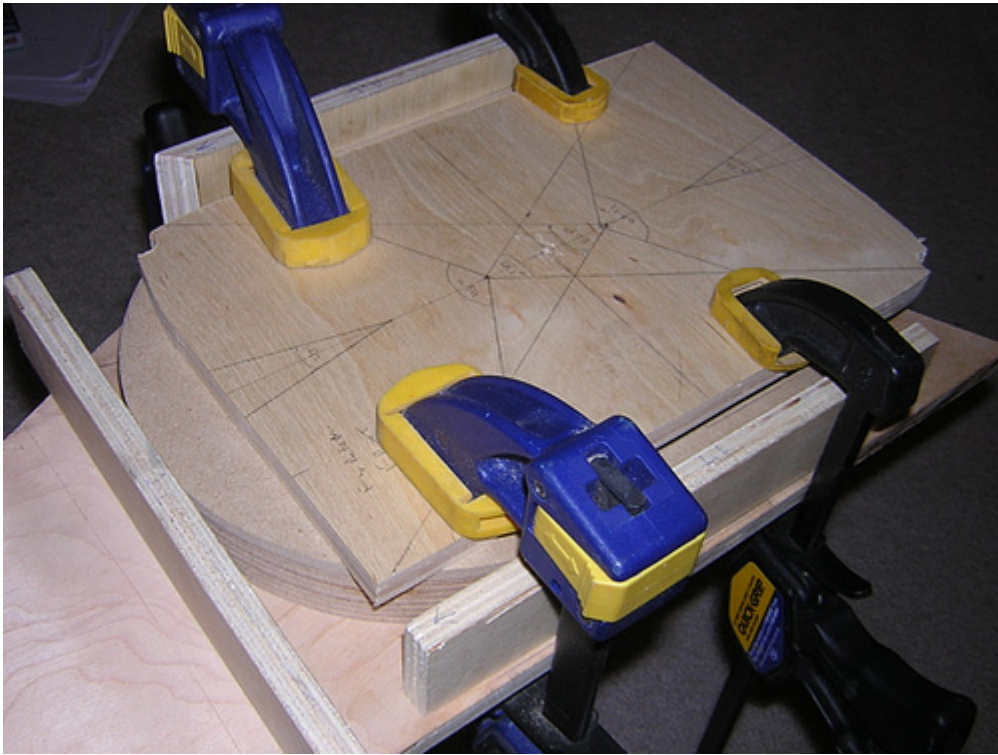
With that done, I could start stacking layers and gluing them. I left the shim layer out of the stack, since I want it to remain separately paintable (it is silver, the rest are white). Plus, I haven't sanded the shim layer's outer edges down to size yet.





I want to apply wood putty to the button and hydraulic holes and sand them before all the layers are glued together. So, counting from the layer just above the shim as layer 1, outward to the top-most layer (layer 7), I glued layers 1 and 2 together, and layers 3 through 7 together. I'll glue these two sets together once I'm done working on the holes.

I clamped everything down, using the rectangle cutout of my skirt to evenly apply pressure across the surface.



*posted by Victor Franco at 11:37 PM* 0 COMMENTS

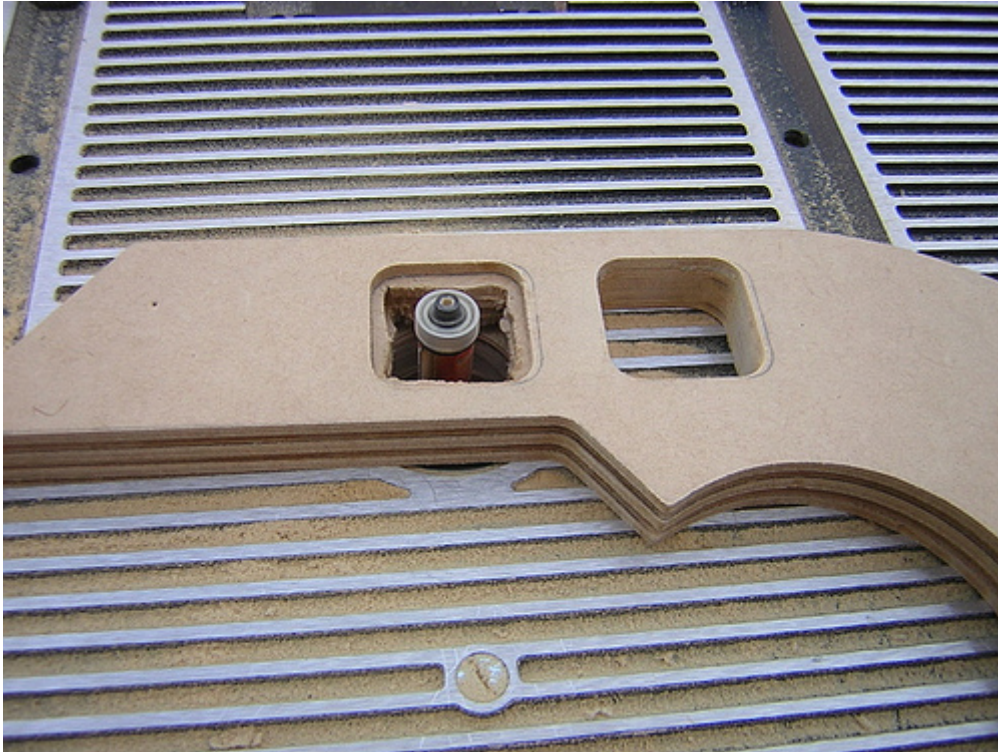
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THURSDAY, APRIL 20, 2006

## Glued Second Horseshoe, Routed Holes

In the morning, I glued up the layers to the second horseshoe set exactly as I did with the first set yesterday.

When I got home in the evening, the glue was dry on both sets, so I was able to route out the hydraulics and button holes. Recall that I originally routed only the top layer to size, and left the others rough-cut. Now I was able to route out all the rest of the layers together, using the top layer as a template, and get a pretty good match.



The results were positive. I still need to apply some wood putty to the seams and sand them down so you won't be able to see the various layers in the holes.





*posted by Victor Franco at 10:10 PM* 0 COMMENTS

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FRIDAY, APRIL 21, 2006

## Puttied & Sanded First Shoulder Holes

Ah yes, DAP Plastic Wood, my arch enemy from the leg build. I used this stuff again in the morning on seams of the layers for the hydraulic and button holes for one of the layered shoulders today, and in the evening sanded it down. I then made a second pass, filling in small gaps and holes. Hopefully one more light sanding and I can work on the other shoulder's holes. Fortunately there is a *lot* less area to cover than the legs had.

*posted by Victor Franco at 11:41 PM* 0 COMMENTS

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SATURDAY, APRIL 22, 2006

## Puttied & Sanded Second Shoulder Holes

This afternoon I did a repeat of yesterday, and puttied and sanded the shoulder holes for the second shoulder.



Earlier in the day I dropped by Mike Senna's for a little while and went over how to go about my next task: Building the booster covers from wood. That will make the horseshoes look like child's play...

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*posted by Victor Franco at 11:25 PM* [0 COMMENTS](#)

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SUNDAY, APRIL 23, 2006

## Finished Gluing Horseshoes

Now that the hydraulics and button holes are puttied, sanded and finished up, I was able to glue the layers with the holes to the layers below them without holes on both shoulder sets. I also did some very minor work on preparing for mounting the front vents to the frame.

*posted by Victor Franco at 11:02 PM* [0 COMMENTS](#)

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MONDAY, APRIL 24, 2006

## Puttied Outer Horseshoe Seams

Okay, the layers are glued up, time to sand the bare MDF a bit and start applying wood putty to the outer edging to hide the seams. I'll start sanding the dried wood putty tomorrow.

I went through this with the legs for what seemed like months. I hope it goes faster this time. After all, how many more days in a row of this can you (or I) take?



*posted by Victor Franco at 10:20 PM* [0 COMMENTS](#)

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TUESDAY, APRIL 25, 2006

## **Sanded Putty on Outer Edges of Horseshoes**

This evening I sanded down the putty from yesterday that I applied to the outer edging of the horseshoes. I made a second pass and applied trace amounts of putty where needed afterward to fill in small gaps. I'll lightly sand one more time, and then the shoulders should be ready for primer. I still need to shave 1/16" off the outer edge of each shim layer too.

*posted by Victor Franco at 10:34 PM* [2 COMMENTS](#)

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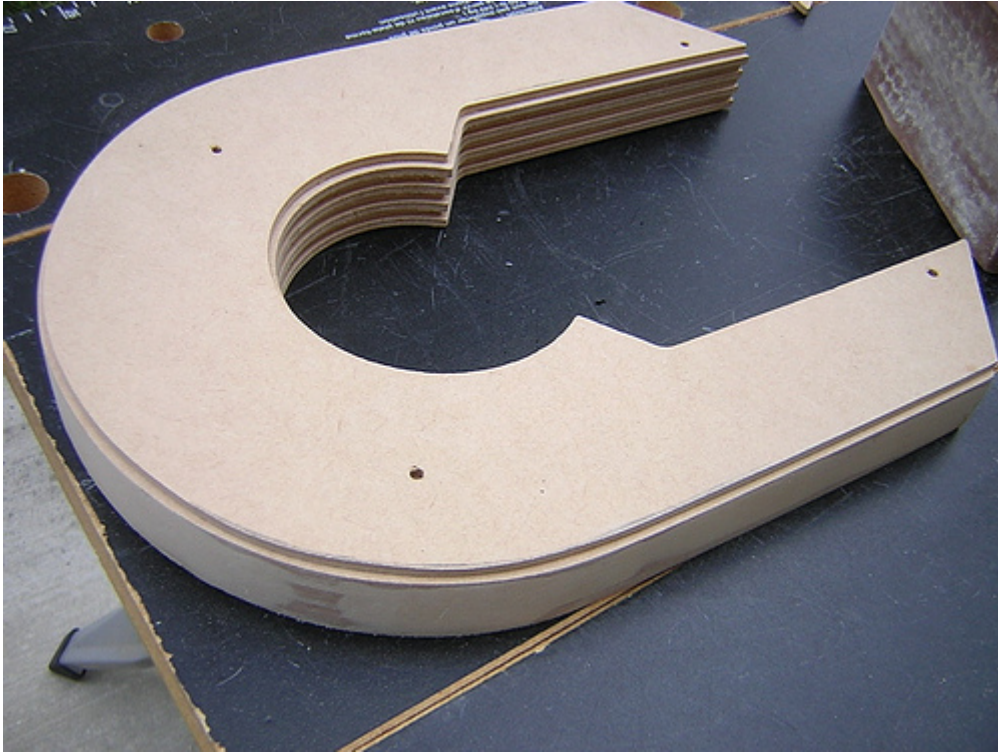
WEDNESDAY, APRIL 26, 2006

## **Sanded Down Shim Layers**

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Once again I flipped the belt sander belly-up, and sanded the edges of the shim layers of the horseshoes. The shim layer is not glued to the other layers. I don't plan to glue it at all so it can be painted (silver) separately from the other layers (white). I still need to do some light sanding here and there on these shoulders to even them out. There are areas that rise and fall just a bit along the edges.



*posted by Victor Franco at 10:58 PM* 0 COMMENTS

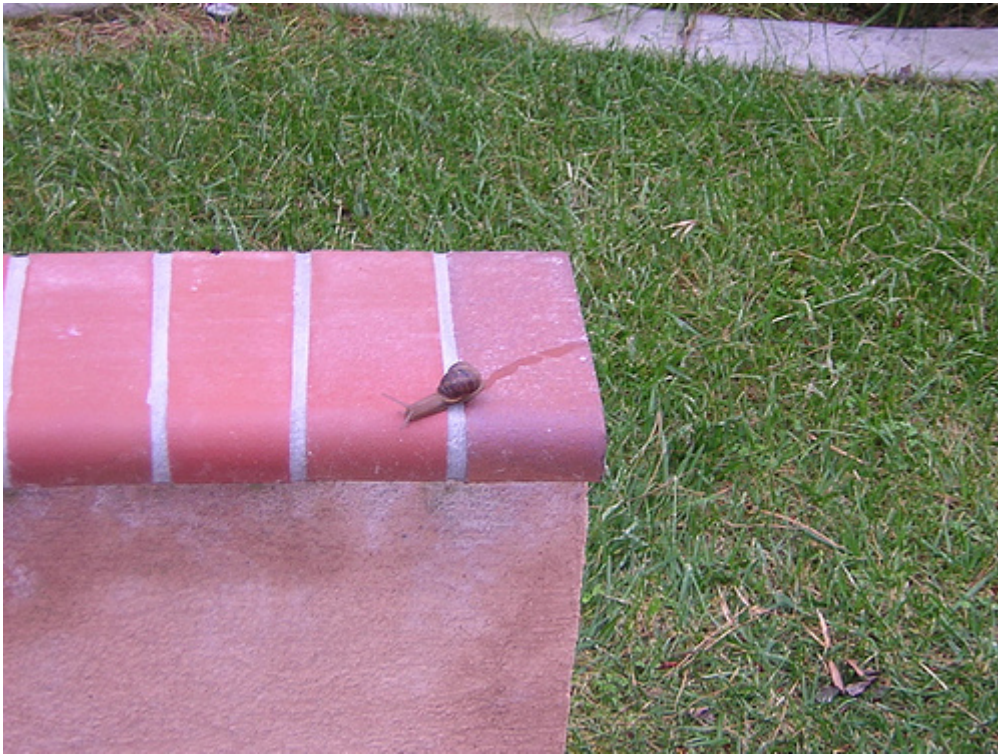
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FRIDAY, APRIL 28, 2006

## Slow Progress

I'm still sanding the horseshoe layers so they'll be as close to perfect as possible. One of my shim layers was better than the other, so I made a 1/4" MDF template from it and cut another 1/8" shim from that. Now I have two fairly decent shim layers.

Self portrait of me working on R2 this week:



*posted by Victor Franco at 10:55 PM* 0 COMMENTS

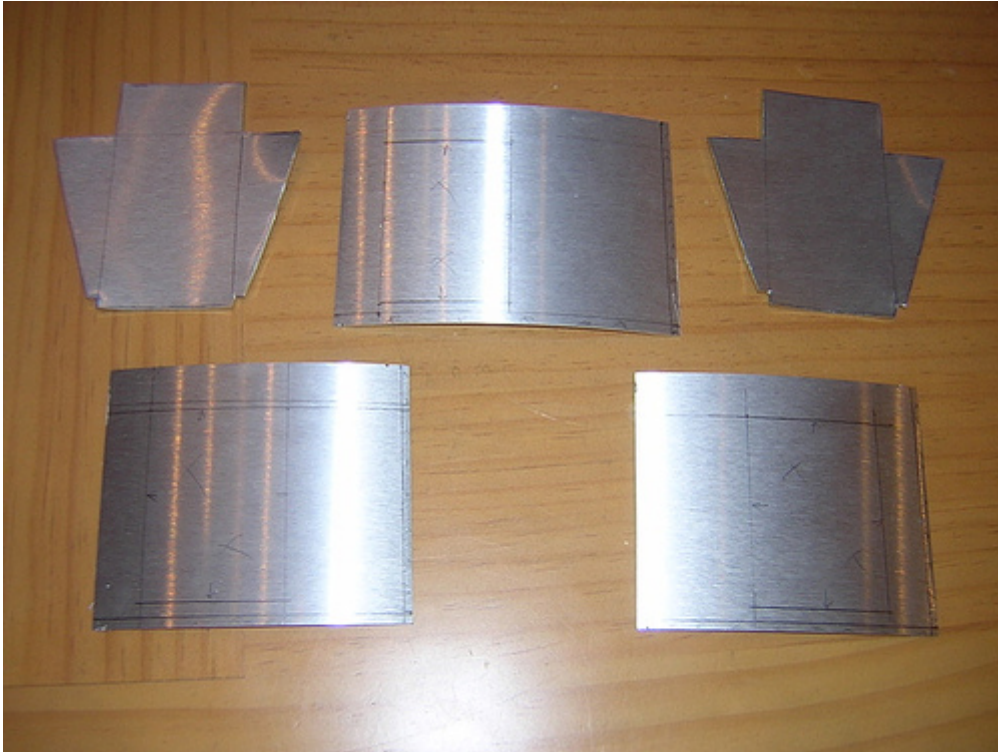
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SATURDAY, APRIL 29, 2006

## Front Vent & Coin Return Work, Shoulder Struts Arrive

I took a day off from the horseshoes to work on other details today. The horseshoes are almost done, I'll probably finish them tomorrow.

In the meantime, I continued working out the mounting of the front vents to the frame. Additionally, I decided to try my hand at the coin returns again, I was never happy with my [previous attempts](#). I cut out a couple of coin return innards, and marked up three coin return frames. Tin snips are the way to go for cutting out the thick aluminum. I still need to cut out another arrow head, and cut the frames appropriately.



Also, the aluminum shoulder struts from Michael McMaster's run arrived today. Excellent!





*posted by Victor Franco at 11:34 PM* 0 COMMENTS

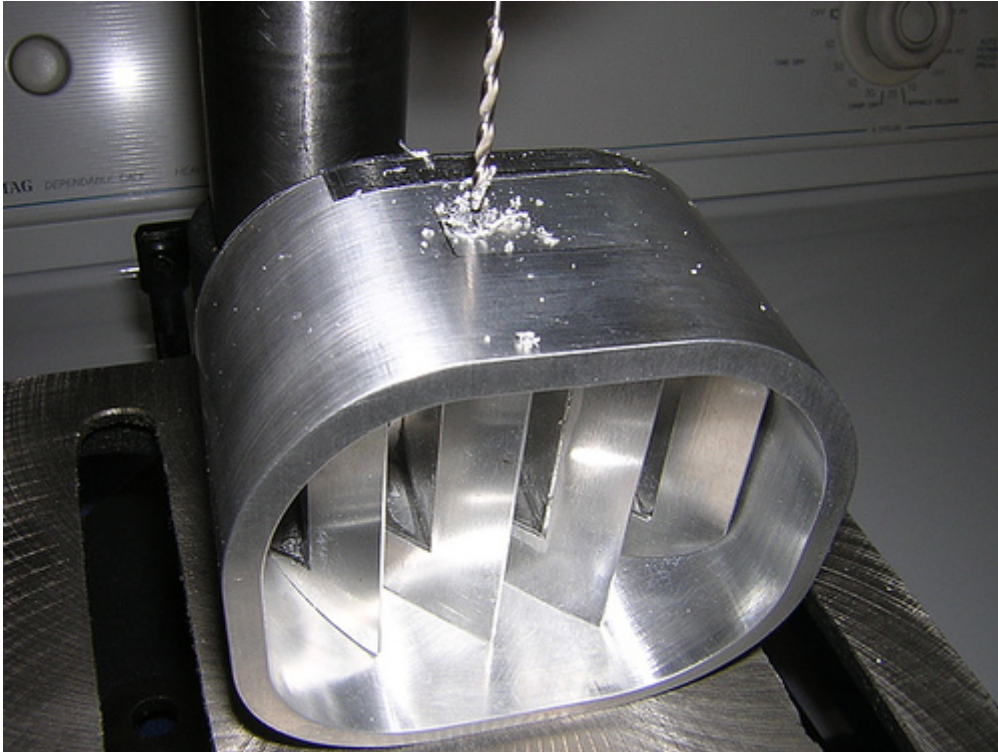
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SUNDAY, APRIL 30, 2006

## **Finished Horseshoes, Built Front Vent Harness, Started Coin Returns (Again)**

This morning I finished up the cloned shim layer that I made the other day, thus completing the horseshoe build. The horseshoes are ready for primer, but it was too breezy today.

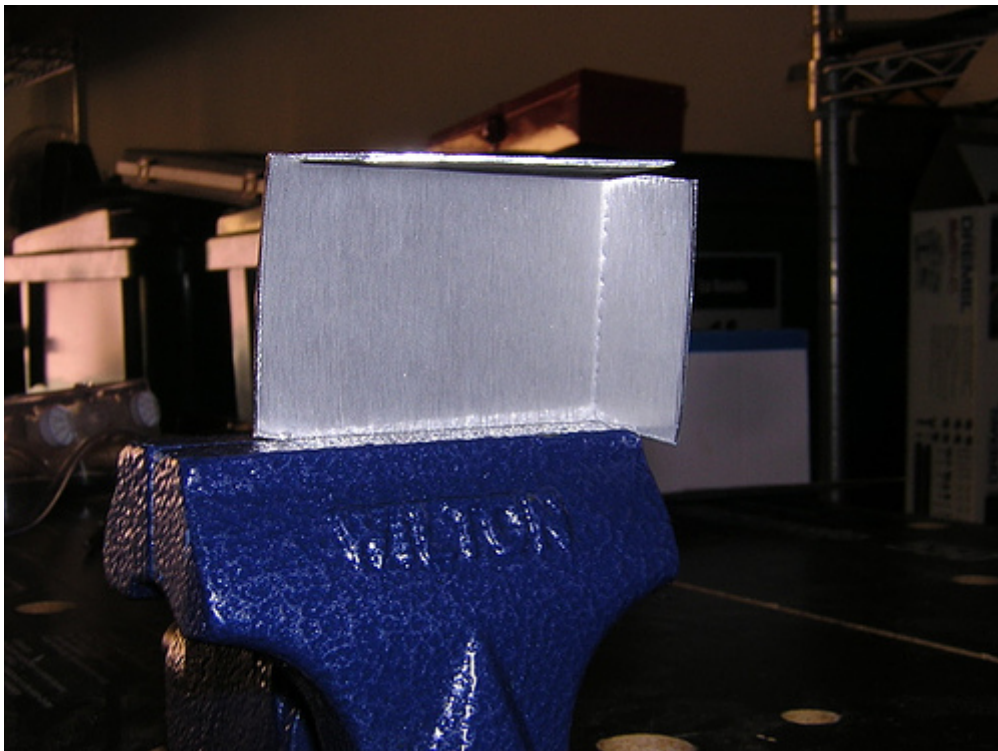
Next I worked on building a harness for the front vents. I drilled holes into the sides of the vent surrounds (I hated to do that, but in the interest of sturdiness, I did), and then tapped the holes for #4-40 screws. The holes were strategically located so they won't show, unless if you were to lay down on the ground perhaps, and even then, only the top vent's holes would be visible.



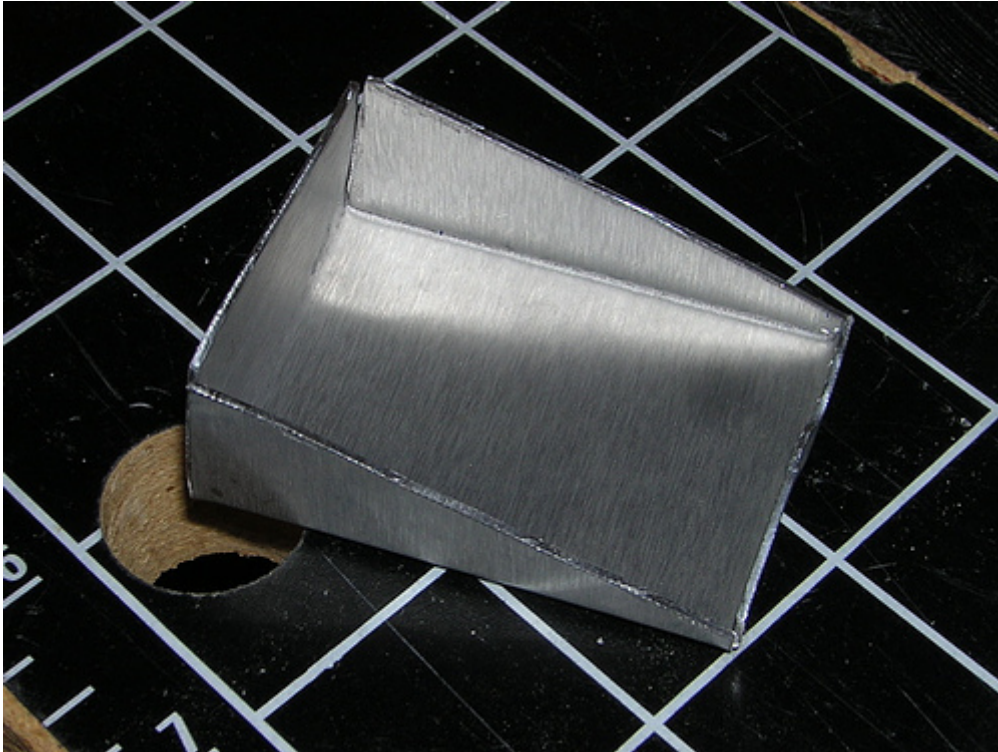
I've managed to live my entire life without ever using a tap until now, that's how far removed I am from being an actual craftsman-type. I glued a small piece of 1/4" MDF to separate the two vents in between them, and then screwed down the rails that will attach to the frame from the inside. The frame ribs on either side of the vents will need to be shaved a bit when I screw the L-channel to them, to have the vents look just right from the outside.



Next, I used the vise to fold the two coin returns that I cut out yesterday. What a difference having the right tools makes! Using tin snips and a vise for the job was so much easier than using scissors and the edge of a table, and produces much better results.







This coming week I will probably keep working on the vents and coin returns, and start thinking about the booster covers, which I hope to start working on next weekend.

*posted by Victor Franco at 10:32 PM* 0 COMMENTS

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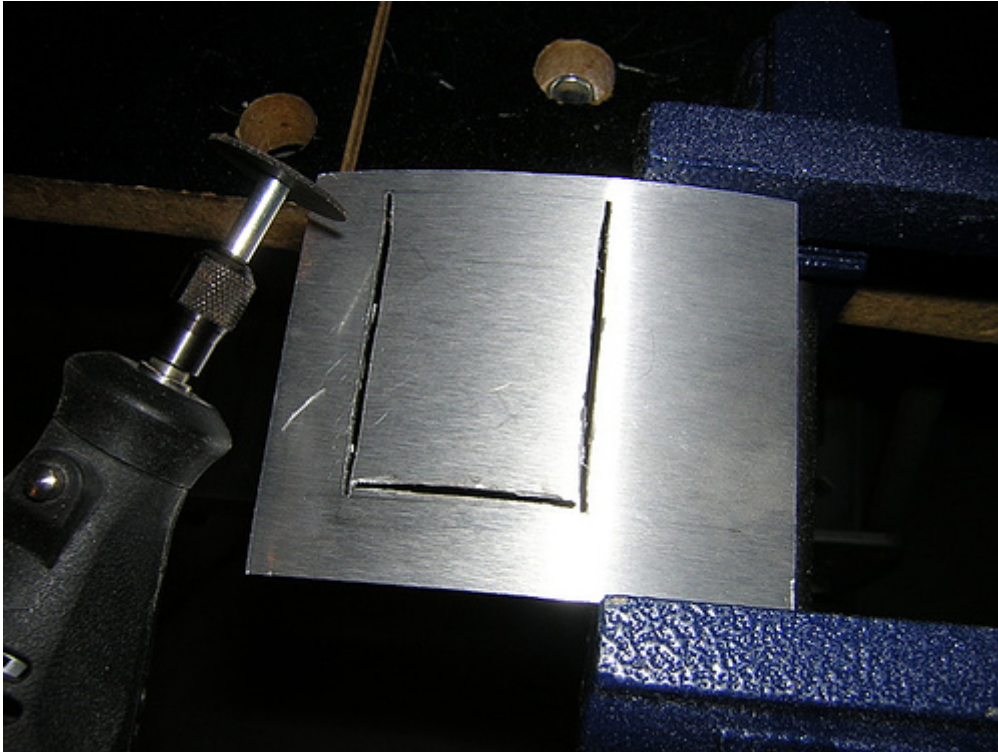
MONDAY, MAY 01, 2006

## Primed Horseshoes, Cut Rear Coin Return Frames

In the morning, I applied the first coats of primer to the horseshoes. Of course, the shim layer only requires primer and paint along the edge, so I didn't give the shim faces full coverage. In the evening I sanded the primer, and I plan to make another pass with the primer tomorrow morning.

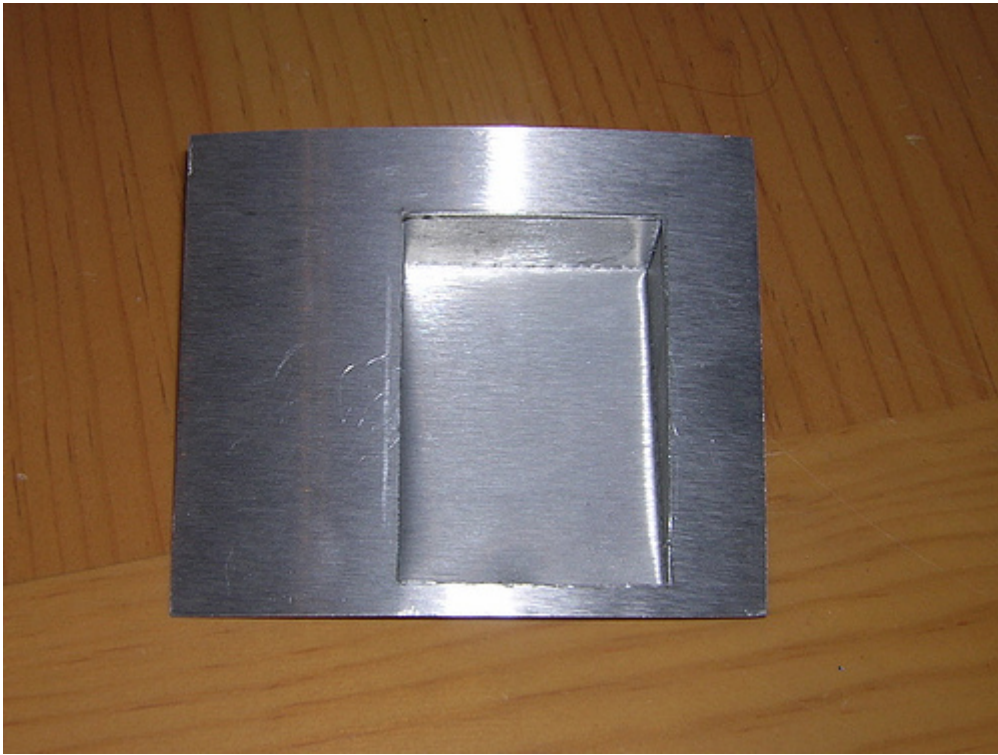


Later in the evening I used the Dremel to carefully rough-cut the two coin return frames for the back door.



I cleaned the frames up somewhat with a file, and set them loosely together with the inner piece of the coin return. I'll eventually JB Weld the frame and inner part together, and then JB Weld the whole thing to the inside of the back door. Luckily scratches in the aluminum tend to disappear over time thanks to oxidation. I hope to get to the front door coin return tomorrow.





*posted by Victor Franco at 9:56 PM* 0 COMMENTS

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TUESDAY, MAY 02, 2006

## **Front Coin Return**

April showers bring May drizzle. I couldn't apply primer to the horseshoes today because it was too damp in the morning and too breezy in the evening. So all I was able to get done was the front coin return. At least the coin returns are pretty much behind me, except for the JB Welding.



*posted by Victor Franco at 9:13 PM* 0 COMMENTS

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WEDNESDAY, MAY 03, 2006

## More Horseshoe Primer

Well, I can kind of see the layers on the horseshoe edges after the first coat and sanding of primer. So I'm using Victor's "Keep blasting it with primer until you can't see seams no more" method of hiding seams (patent pending). Not sure how long this will go on for. I might be better off sanding the primer off and going over it with the putty again. We'll see.

Nice to see several builders on the board today that have done their booster covers from wood (hi PF, Bruce, Alan, Mike and others!). I'm going to need all the good ideas and methods I can find.

*posted by Victor Franco at 7:03 PM* 0 COMMENTS

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THURSDAY, MAY 04, 2006

## More Primer, Front Vent Work, JB Welded Coin Returns

The primer saga continues for the horseshoes, as I try to get the edges as smooth as possible. I typically lay down three coats of sandable primer, lightly sand, and repeat. It's progressing, so I think this is the way to go.

I needed to shave the vertical rib to the right of the front vents some more to accommodate the front vent harness.





Then I drilled the rails for the harness so they can be screwed down onto the back of the vertical ribs. I marked the spots on the rails to drill, and used my trusty drill press, on my trusty dryer. I bent an area of one of the rails because it was bumping into a horizontal rib in the frame.



A test fitting looks good. I got careless handling the vents and knocked off the top slat of the upper vent, but another dose of Loctite glue did the job.



Finally, I gouged out spots on the wooden frame base plate where the coin returns will go, and I JB Welded the coin returns. I remember dreading these earlier, but they didn't end up being a complete disaster after all (although I still need to attach them to the skins...).



*posted by Victor Franco at 10:24 PM* [2 COMMENTS](#)

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FRIDAY, MAY 05, 2006

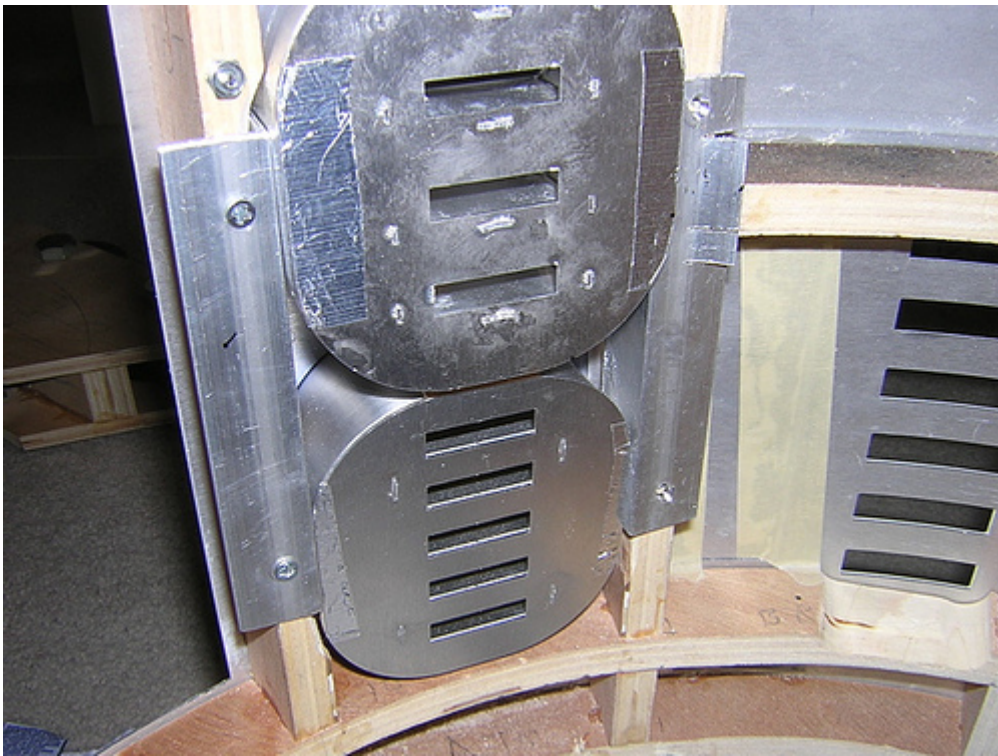
## **Glued Two Coin Returns, Secured Vent Harness**

In the morning I used silicone to glue in the front coin return. In the evening I glued in the back door's right coin return. The back door's left coin return still remains to be glued in (probably tomorrow).





I also screwed the vent harness into the frame. (Yea!)



I have not glued down the blue vent surround, it is still loose.



Oh yes, and needless to say, more primer on the horseshoes. Getting closer to being done.

*posted by Victor Franco at 10:51 PM* [1 COMMENTS](#)

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SATURDAY, MAY 06, 2006

## Started Booster Covers

Another deep breath as I venture off into the unknown once more. (I tend to be overly dramatic sometimes.) Thanks to a bunch of people who have chimed in with help on how to do the booster covers, I finally got started. I'm not at all sure that I'm going about this in a good way, we'll see. I'm using two layers of 3/4" poplar today for the bottom part. The total height for this portion of the booster covers is just over one inch, so some cutting will be in order later.

First, I cloned an MDF template for the bottom portion of the booster covers that Mike Senna graciously let me borrow.



Mike suggested that I might want to close the "tuning fork" at the bottom, so the two ends would stay separated from each other by a constant distance while woodworking. So I took the cloned Senna template and made another clone, this time with the bottom ends still connected. This way the two "legs" won't have a tendency to bow as I work with the template and its resultant cuts. Later I can chop off the bottom and open up the tuning fork on the final pieces.





I rough-cut four booster cover layers. Before routing them all down to size, I decided to do what I did with the horseshoes. That is, I'm routing one layer down to size using the MDF template, but I'm leaving the other layer rough-cut until after the two layers are glued together. Then I'll come back with the router and route the second layer down to size, using the first layer that is glued to it.

Shown here from left to right are the two templates, followed by two pairs of booster cover layers, one layer routed down to size (the darker poplar), the other rough-cut (the lighter poplar).



Finally, I glued the rough-cut layers to the properly-sized layers for each booster cover.



On a carry-over from yesterday, I siliconed in the left coin return on the back



door, so the coin returns are done. And yes, I did the obligatory work on sanding and primer for the horseshoes.

*posted by Victor Franco at 11:08 PM* 0 COMMENTS

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SUNDAY, MAY 07, 2006

## Routed and Cut Booster Covers

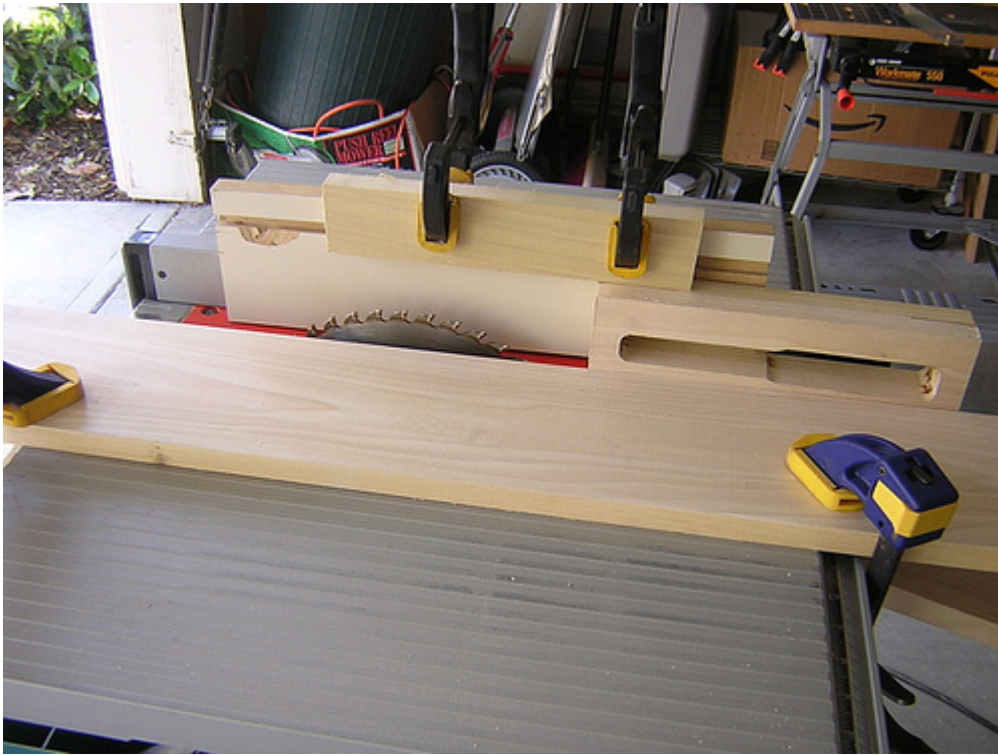
Time to break out the router table again.

In the morning, the glue had dried and I was able to route the top booster cover layer down to size to match the bottom layer that was glued yesterday. I was warned that the router bit would tend to grab the wood fibers, and it sure did. Fortunately, I don't think any damage was done, but it wasn't a pleasant experience.



Once that was done, it was time to cut a nine degree angle at the top of the booster cover, per the blueprints. I referenced Alan Wolfson's helpful [web page](#), and set up the table saw for this cut. Thanks Alan for having this page!





I think everything turned out okay today. The booster covers have some scorch marks from the table saw blade, but I sanded everything smooth, so it's just cosmetic.



Lots of work still to do, like straightening out the curved areas in the keyhole area, and cutting the bottom part off the tuning fork. And yes, more primer work on the horseshoes. Getting closer. :)

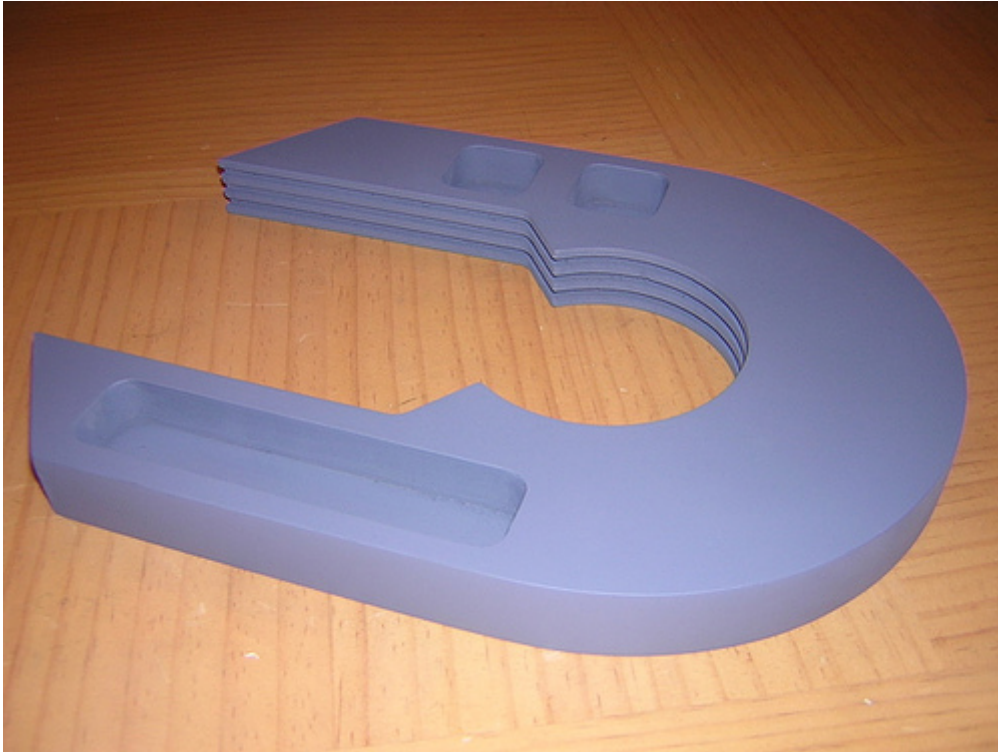
*posted by Victor Franco at 10:02 PM* 0 COMMENTS

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MONDAY, MAY 08, 2006

## Still Polishing the Bullet

I keep mentioning the sanding and primer of the horseshoes, trying to get them just right. Pretty soon it'll be time to stop polishing this bullet, and fire it already.



I had other commitments this evening, so I didn't have a chance to work on the booster covers. Hopefully tomorrow.

*posted by Victor Franco at 8:10 PM* 0 COMMENTS

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TUESDAY, MAY 09, 2006

## Squared Corners

Using a couple of different files, and some sandpaper, I squared off the upper corners of the keyhole area of the booster covers as best I could. These areas really won't be visible, as they are covered by the doghouse, but the leg struts need to fit up in there.





*posted by Victor Franco at 8:15 PM* 0 COMMENTS

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THURSDAY, MAY 11, 2006

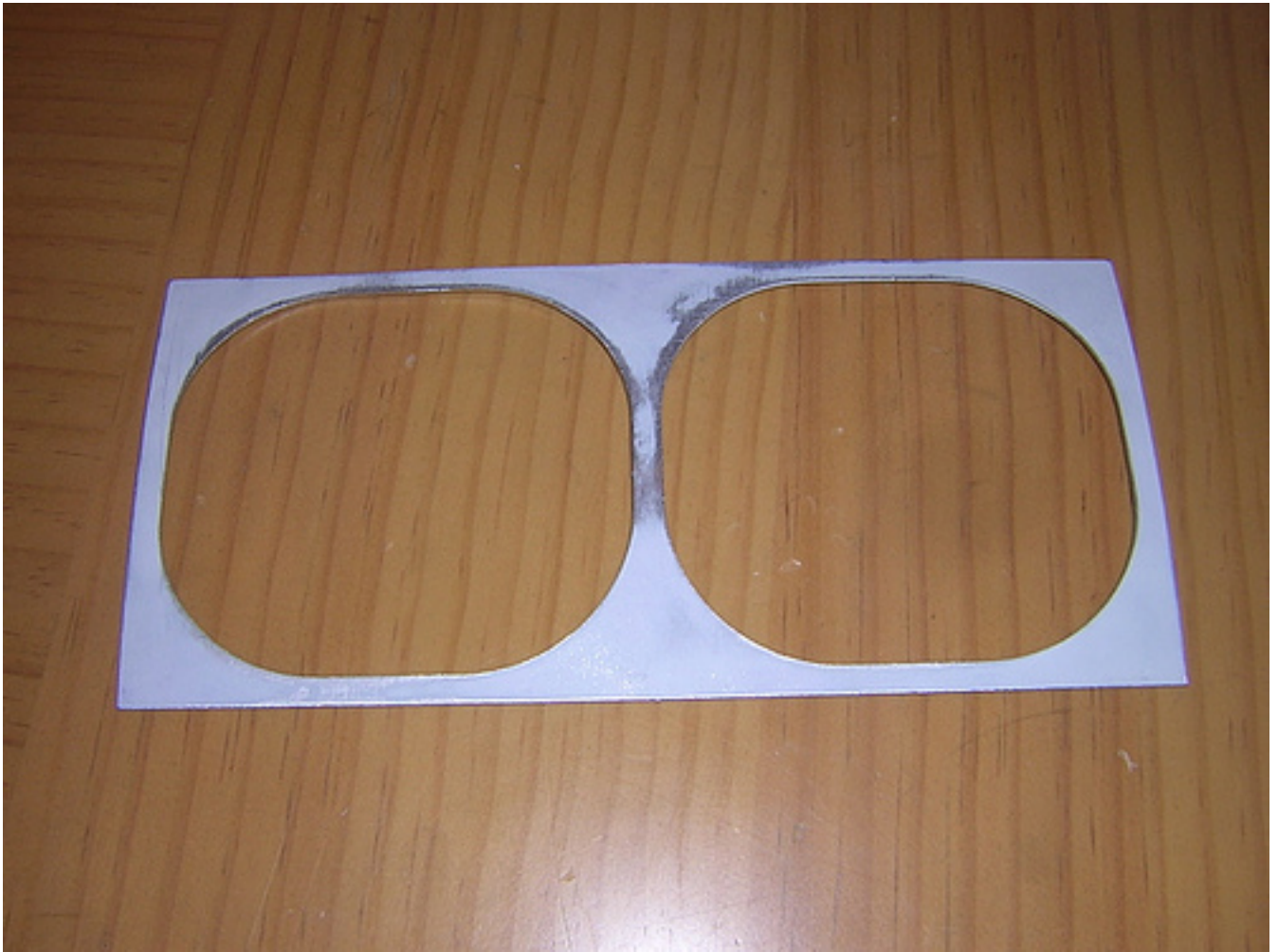
## Stripped Paint from Front Vent Skin

I went a little bit backwards today.

I've placed the aluminum part of the skin that surrounds the front vents on and off so many times, the paint was starting to chip and look bad. So I decided to bite the bullet and strip the paint off with acetone, and I'll repaint it this weekend. Most of the primer stayed on, which probably speaks well of the primer (Rustoleum white primer).

The bottom vent needs to move forward just slightly, and I'll need to keep testing placement of this part of the skin while adjusting the vent placement, so this way I don't have to worry about scratching more paint off, knowing I'm going to repaint it anyway.

I sanded down the metal somewhat on the inside of the ovals, so they won't rub up against the vent surrounds so much when I place this piece back on.



*posted by Victor Franco at 9:24 PM* 0 COMMENTS

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FRIDAY, MAY 12, 2006

## Reprimed Front Vent Skin, Aluminum Logic Surrounds Arrive

This morning I reprimed the area of the skin that I cleaned up yesterday that goes around the front vents. When I got home Wayne's aluminum logic surrounds were waiting for me. This [looks familiar](#).



*posted by Victor Franco at 11:02 PM* 0 COMMENTS

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SATURDAY, MAY 13, 2006

### **Front Vent Area Work, Charity Event**

In the morning I shaved a little wood off the bottom of the back of the ribs that surround the front vents, so that the bottom vent would sit forward a bit more and be even with the top vent.





Then I repainted the area of the skins that goes around the front vents, to repair the paint chipping I had inflicted.



In the afternoon it was off to Rite-Aid, where Mike Senna, his R2, and some 501st members were fundraising for the [Children's Miracle Network](#). As usual, Mike was quite the expert at keeping R2 interacting with the crowd and posing for pictures.





It was almost non-stop picture taking, but occasionally things got slow.





My friend Kelvin (who's power tools I'm borrowing) and his family dropped by, so we added to the donations and got a group picture taken with Mike's R2 and the 501st folks. My coworker Rich and his kids had paid a visit earlier, and they were duly impressed.



So I didn't get much building done today, but it was nice to remember why I'm doing this in the first place.

*posted by Victor Franco at 9:30 PM* [0 COMMENTS](#)

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SUNDAY, MAY 14, 2006

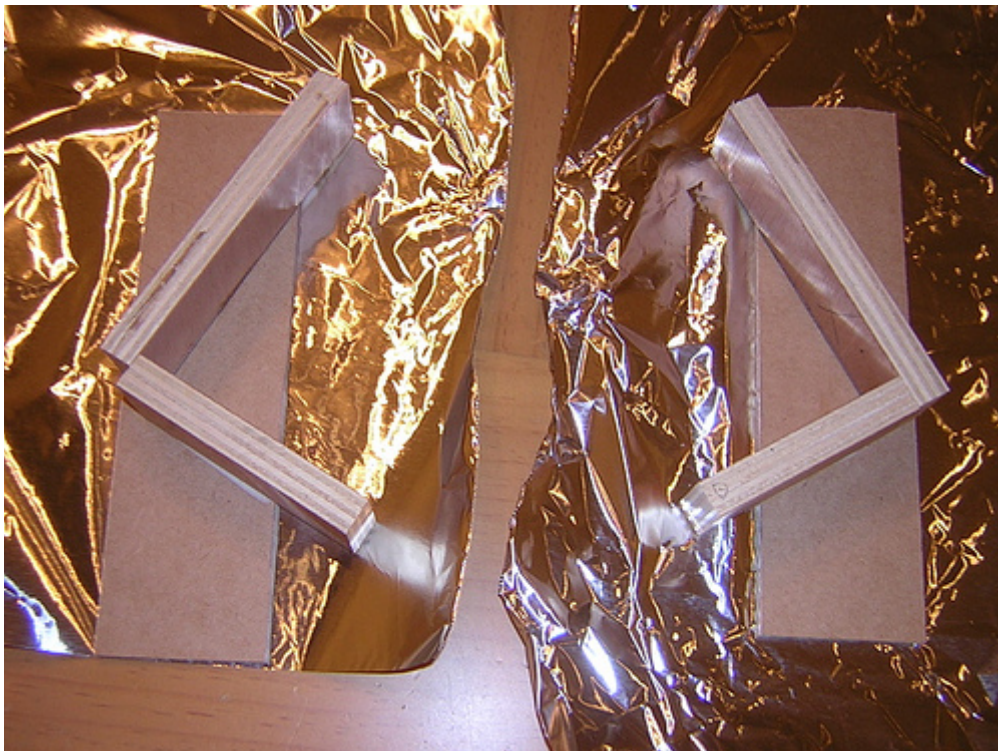
## Started Building Doghouse & Jig, Sanded Backs of Octagon Ports

Today I got to work on the "doghouse" that will cover the top of the leg strut. I cut a few pieces of 1/4" MDF to size, and glued them up to make two doghouses.



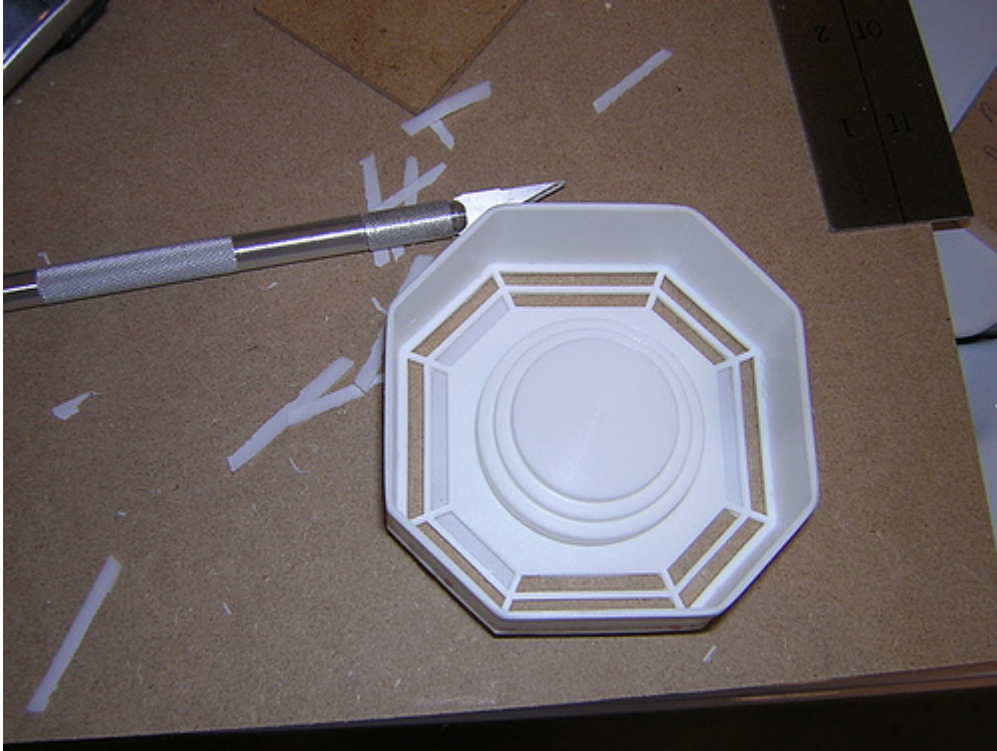


Next, I made a couple of jigs to trim the doghouses to size later. I needed a template for both sides of the doghouses. I will use the templates with the table saw, with the blade tilted to a nine degree angle to match the top of the booster cover. This will be clearer when I make the cuts later.





Finally, I decided to sand the backs off the octagon ports so that the latticework can show, like on the real R2 (and per the blueprints). I sanded until the resin was practically transparent, and then used an X-acto knife to finish the job.





*posted by Victor Franco at 11:30 PM* 0 COMMENTS

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MONDAY, MAY 15, 2006

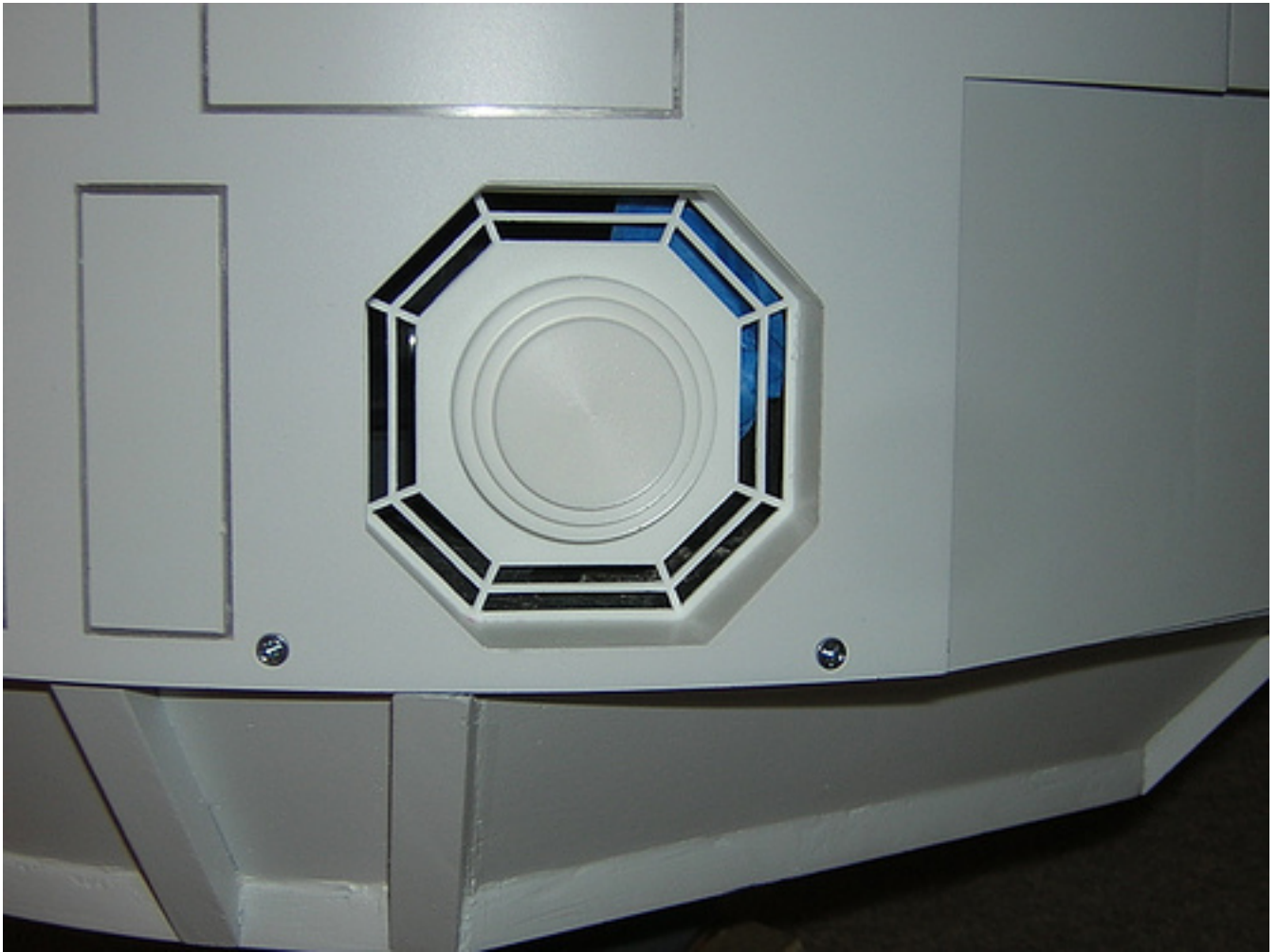
### **Glued In Front Vent Skin**

Now that the paint is nice and dry on this piece, I glued in with silicone the part of the aluminum skin that goes around the front vents.



For fun, I used blue tape to secure the front octagon port into the body from behind, to see how it looks now that the latticework has been cut. Obviously I still need to paint this part.





*posted by Victor Franco at 10:23 PM* [2 COMMENTS](#)

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TUESDAY, MAY 16, 2006

### Primed Octagon Ports

Not much today. I just applied three coats of Rustoleum white sandable primer to the octagon ports. Hope to paint these some day soon.

*posted by Victor Franco at 9:14 PM* [0 COMMENTS](#)

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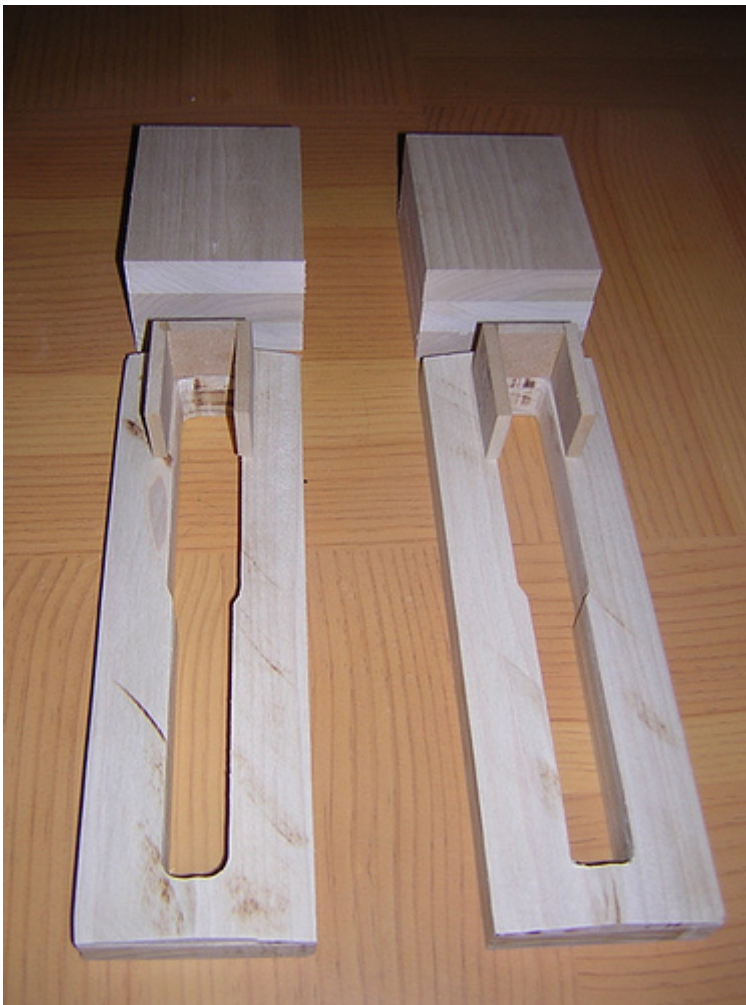
WEDNESDAY, MAY 17, 2006

### Cut Top of Booster Covers

Tonight I made the first cuts for the top portion of the booster covers, using three layers of 3/4" poplar that I glued together after cutting each layer.

I didn't leave myself much margin for error side-to-side, but I made these parts deeper and wider than required, so I have some slop to play with there. The current dimensions, when facing this head-on as if they were mounted on the droid, are 3.125" wide, 4.00" tall and 2.25" deep. The height and depth need to be cut down, but the width is pretty much to spec.

How am I going to cut something this thick? Very carefully, I guess. Okay, Alan, if you are out there, start throwing out some pointers! :) Right now I only have a table saw and miter saw at my disposal. It seems a band saw would be the best option, if only I had one.



*posted by Victor Franco at 8:56 PM* 0 COMMENTS

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THURSDAY, MAY 18, 2006

## Painted Octagon Ports

This evening I painted the octagon ports. After a couple of paint tests with both Krylon and Rustoleum chrome paints, I decided on the Rustoleum because I

found it to be a bit more reflective. You won't mistake these for actual aluminum, but they're passable.



Alan Wolfson kindly provided some advice on shaping the top part of the booster cover. I think what I will do is recut a new set of booster cover tops that are closer to the proper size, and then use Alan's advice on sanding the required shapes down.

*posted by Victor Franco at 10:25 PM* 0 COMMENTS

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FRIDAY, MAY 19, 2006

## Recut Booster Cover Tops

I decided it would be for the best if I recut the booster cover tops to be closer to their final dimensions, so I did so. I will belt-sand these down to size, hopefully starting this weekend.







I'm not happy with how the paint job on the octagon ports turned out. They look too dark, compared to the other aluminum details. I'm planning on repainting those this weekend with the Krylon Chrome Aluminum paint, because it is a bit lighter and seems to be a better match to what is currently on my droid.

*posted by Victor Franco at 11:02 PM* [0 COMMENTS](#)

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SATURDAY, MAY 20, 2006

## Repainted Octagon Ports, Sanded & Marked Booster Cover Tops

In the morning, I repainted the octagon ports with Krylon Chrome Aluminum. Hmm... I'm still not super happy with the look, too glittery. What's a malcontent to do? We'll see, maybe I can live with it.



In the afternoon, I sanded the booster cover top rough-cuts to size using the belt sander.





After that, I marked them up in preparation for some cutting and sanding that will be required to continue to shape them. It took me a lot longer to mark these up than I would have guessed. Things always go slower when you don't know what you're doing...



*posted by Victor Franco at 9:39 PM* 0 COMMENTS

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SUNDAY, MAY 21, 2006

## **Booster Cover Progress & Setbacks**

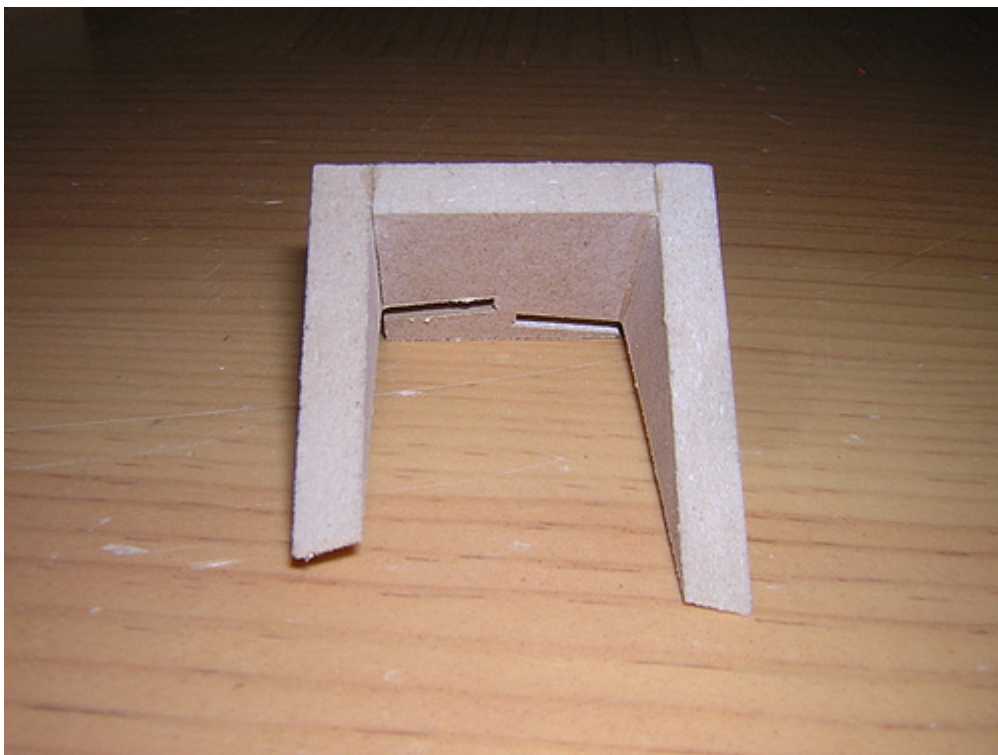
As the title says, today was a mixture of progress and setbacks, pretty much intermixed as the day went on.

First, it was time to use my doghouse templates to do the angled cuts. I tilted the saw blade to the same nine degree angle that matches the top of the booster cover, on which the doghouse will sit. I always hate to get my fingers anywhere near the saw blade, but I survived fine.



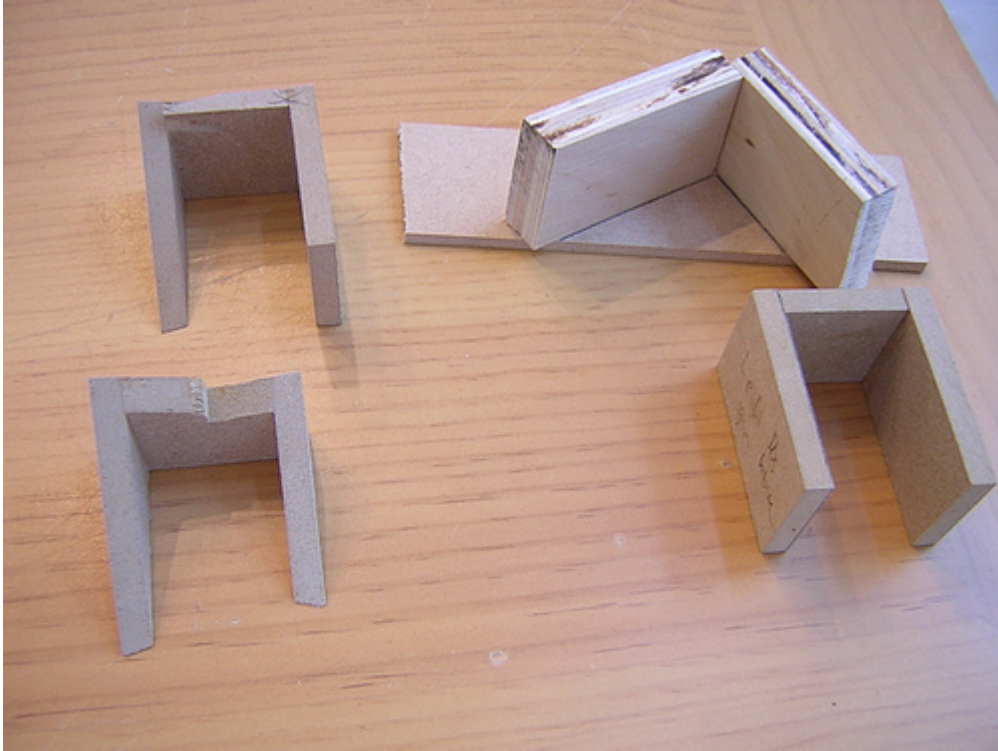


Okay, the first pass turned out okay. Time to cut the other side of the doghouse with the mirror-image jig. Uh-oh. I found out after the fact that the other jig was not a mirror image after all. Doghouse ruined :(

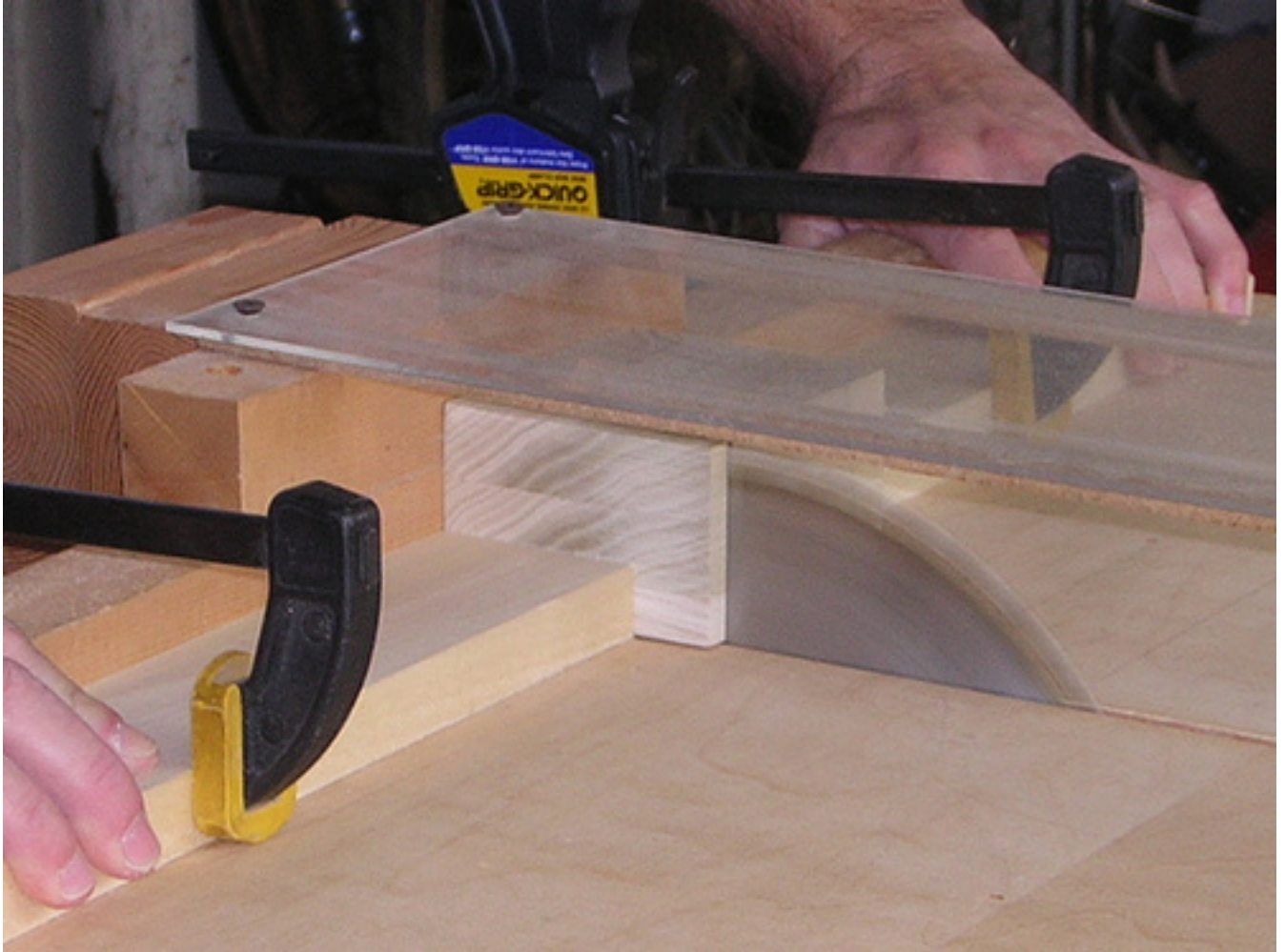




Luckily I had cut the parts for a spare doghouse last week, so I can use that to replace this one. Needless to say, I did not attempt to use the faulty template on the second doghouse, so it has only one side trimmed. I also made a new template to replace the defective one.



Next, it was time to move onto the top part of the booster cover. I needed to make a cut 1/4" from the bottom of the block, so that I can cut the grooves in the block where they belong. Later I can glue this end cap back on. The cut for the first booster cover top went fine. While cutting the second booster cover top, the block kind of lifted as I cut it, so I had to stop mid-cut, and finish it off with a hacksaw by hand. :(

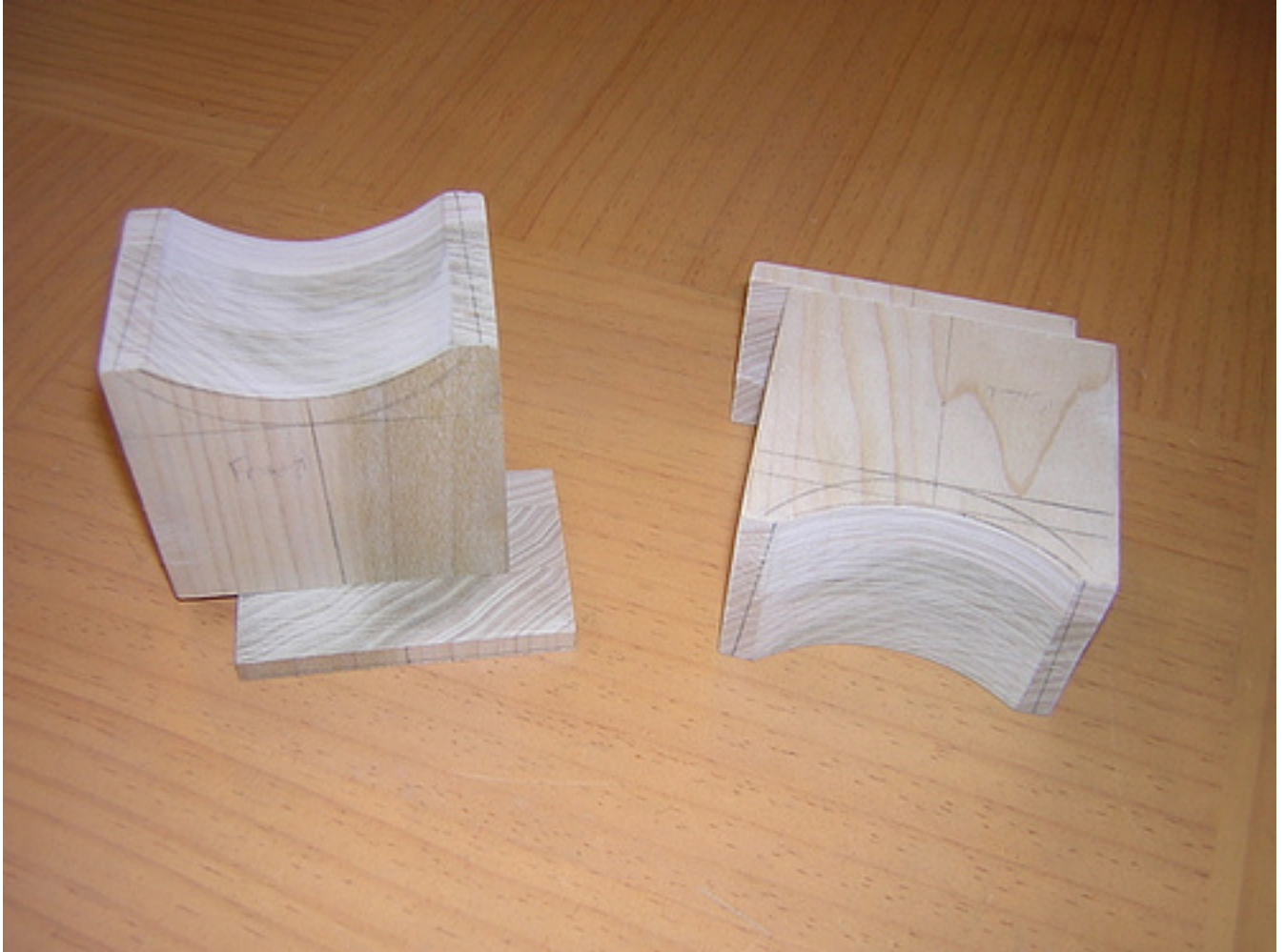


With those cuts done, I started working on the curved part of the booster cover tops. Following some guidance from Alan Wolfson, I used the drill press with the sanding drum attachment. This worked pretty well. I've only sanded out the shallowest of the two arcs. I will need to progressively sand out the larger arc later.



So it was a day of mixed results. I made some progress on the booster covers, but I'll have to redo some of the work. Oh well, that happens.





*Note: I won't be able to do any building until this Thursday at the earliest, so no updates for a few days.*

*posted by Victor Franco at 5:13 PM* [0 COMMENTS](#)

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THURSDAY, MAY 25, 2006

## **U-channels Arrive, Finished Cutting Doghouses**

Back from a business trip to Cleveland, I was able to resume building activities.

Darryl's U-channels arrived in today's mail, and they appear to fit my budget feet very well.



I had a chance to finish cutting the half-cut doghouse, and cut a new doghouse to replace the ruined one from the weekend. I hope to work on the top part of the booster covers this weekend.



*posted by Victor Franco at 11:11 PM* 0 COMMENTS

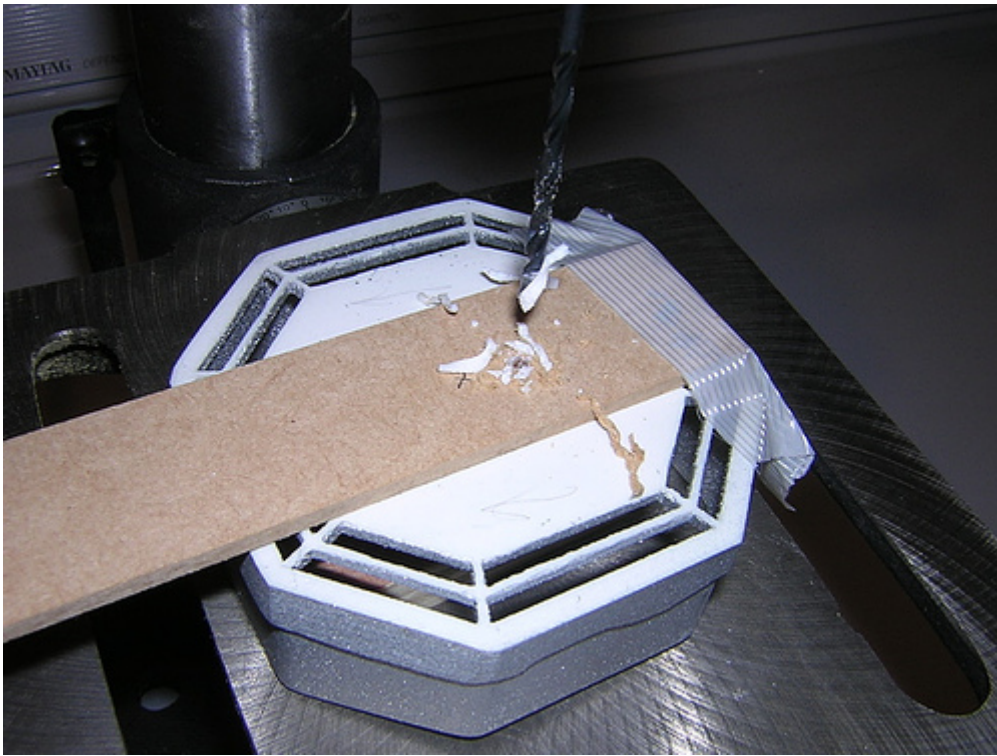
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FRIDAY, MAY 26, 2006

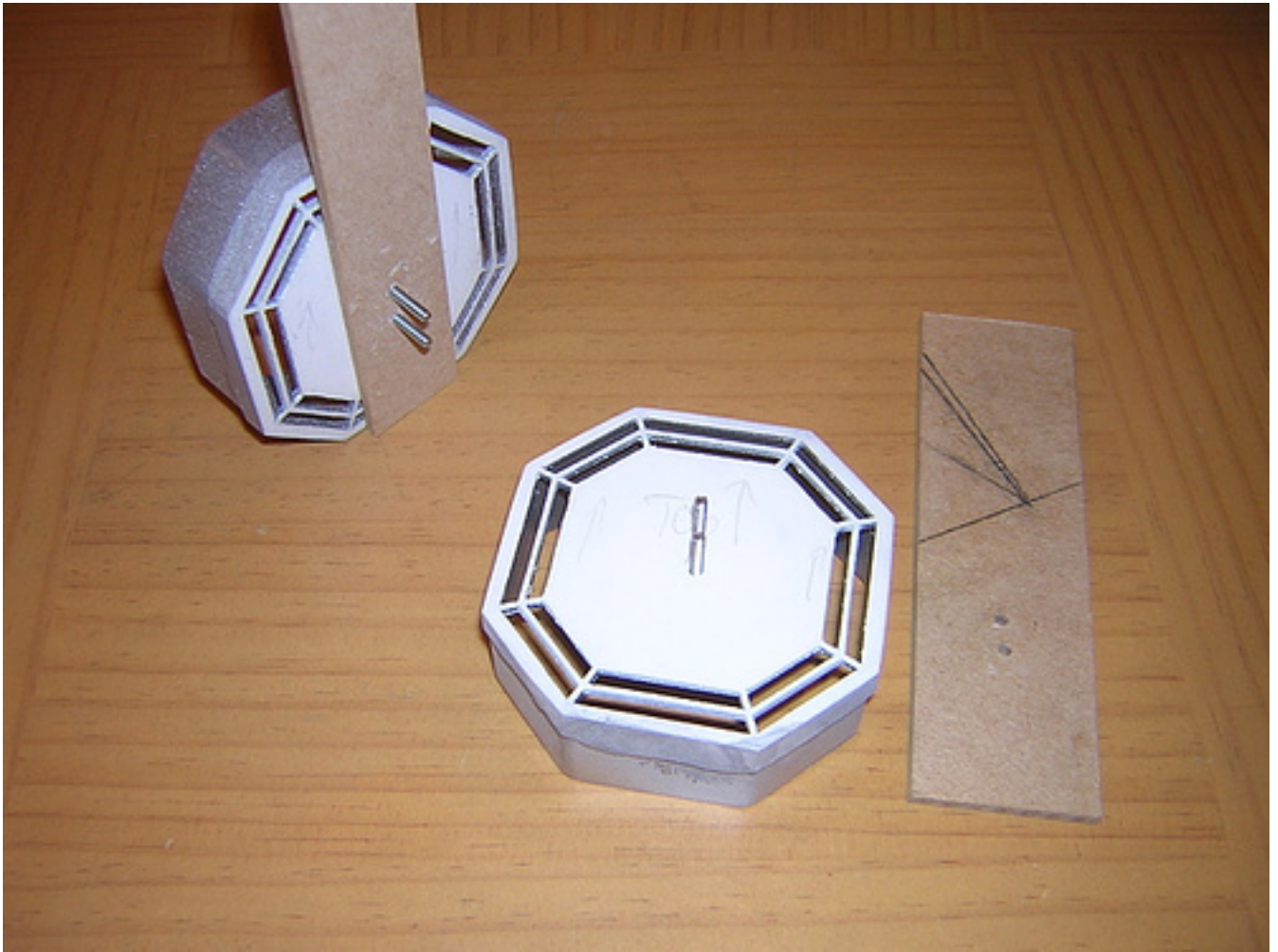
## Drilled Octagon Ports, Dado Cuts for Booster Cover Tops

After recovering from my giddiness at receiving my holoprojectors, I got back to work.

First, I drilled the backs of the octagon ports to accommodate screws for attaching a paddle that will hang from the frame on the inside. I cut off the ends of some #4-40 screws and glued them in the holes.







Next, it was time to make dado cuts into the booster cover tops. My friend Kelvin came over to help with those, since they require a change-out of the saw blades, and I don't know what I'm doing when it comes to that (and most everything else). Kelvin did the actual cutting, which was fine with me.



Lots more work to do on these booster covers, but they are coming along slowly but surely.

*posted by Victor Franco at 9:58 PM* 0 COMMENTS

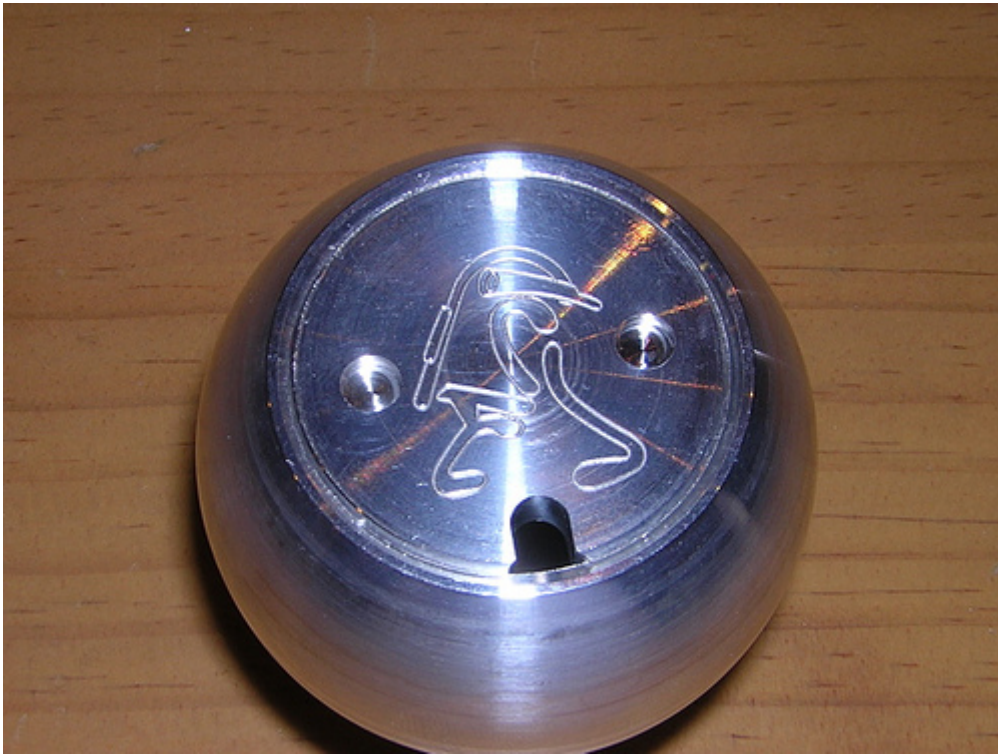
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## Aluminum Holoprojectors Arrive!!

Oh happy day! The day I thought would never come, the holoprojectors that I ordered back on [June 8, 2005](#) arrived today. They are absolutely beautiful, I can't wait to mount them in my dome!







*posted by Victor Franco at 4:21 PM* 2 COMMENTS

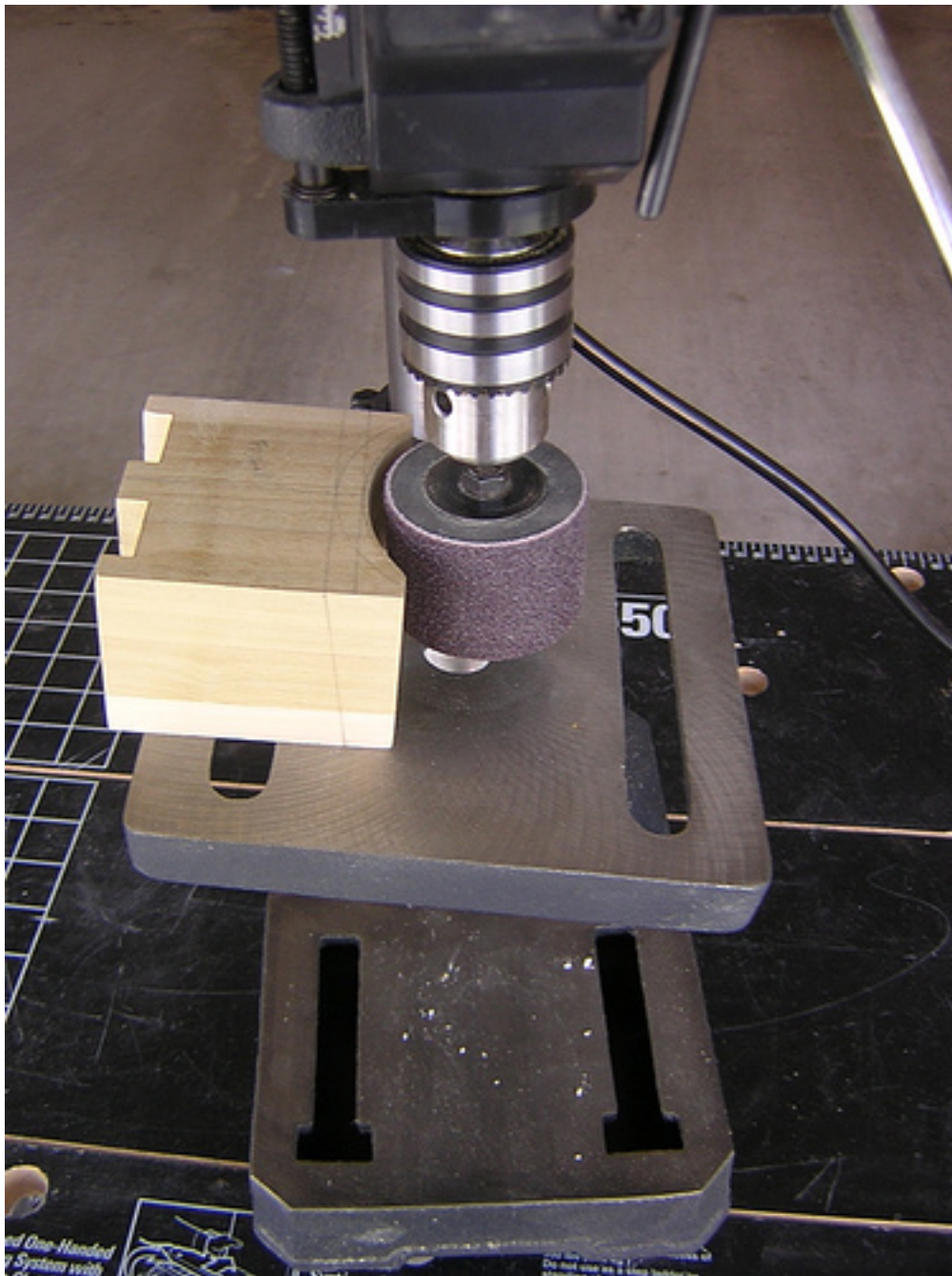
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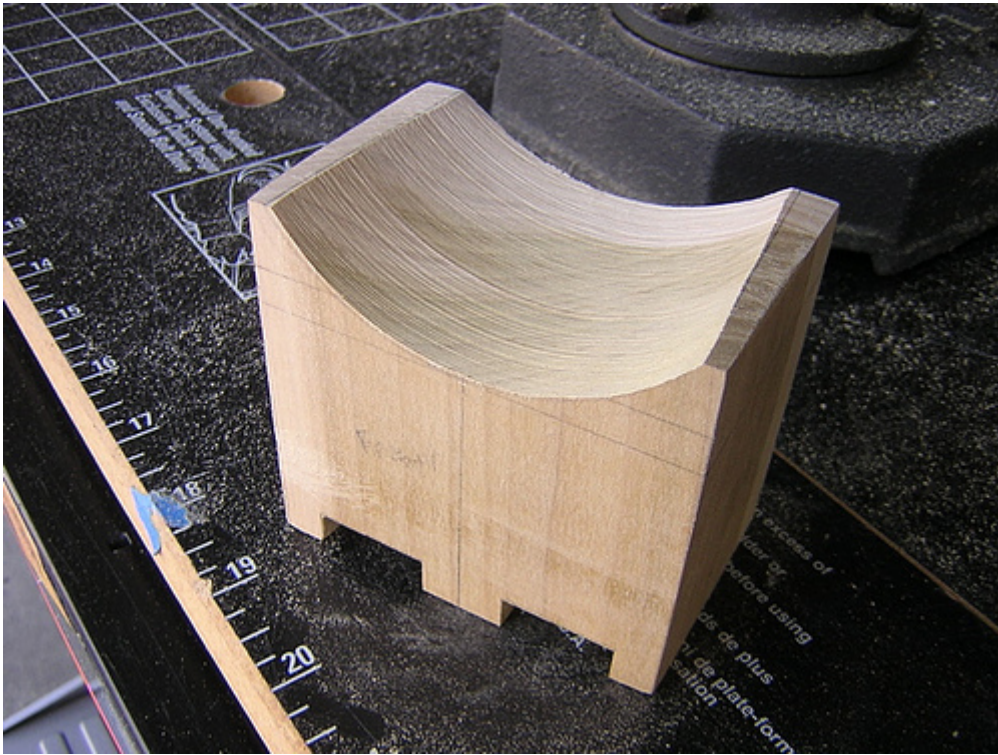
SATURDAY, MAY 27, 2006

## **Booster Cover Work, Installed HPs and Octagon Ports**

Today was fairly productive.

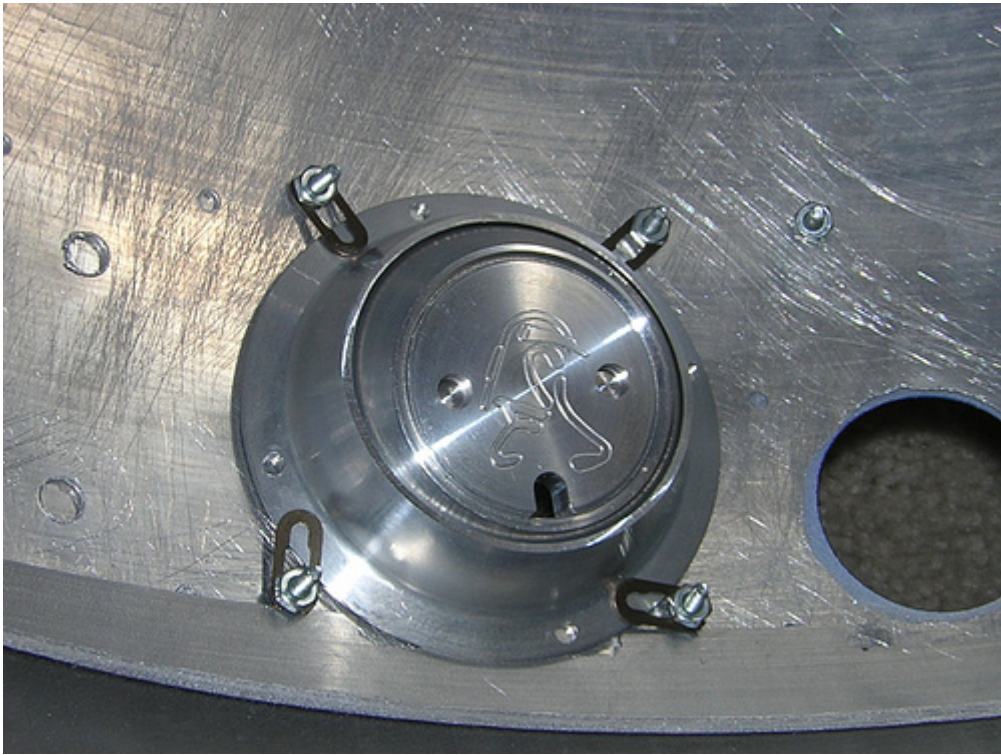
I returned to work on the booster cover tops, where the curve still required sanding. I tilted the drill press table to the proper angle, and using the drum sander, finished sanding out the curve on top for both booster covers.





Since I couldn't wait to see the holoprojectors in the dome, I tackled that next. For now, I am using clips used for a bicycle chain to hold the HPs in place. This seems fairly sturdy, but I may go with another solution before I'm done. I was able to use [the screws I placed in the dome earlier](#) to anchor the clips. With those HPs installed, R2's dome is looking more and more real.







Finally, I painted black the outward facing sides of the paddles that hold the octagon ports in place. Once they were dry, I screwed them into the frame, completing the octagon port portion of the build.



*posted by Victor Franco at 8:39 PM* 0 COMMENTS

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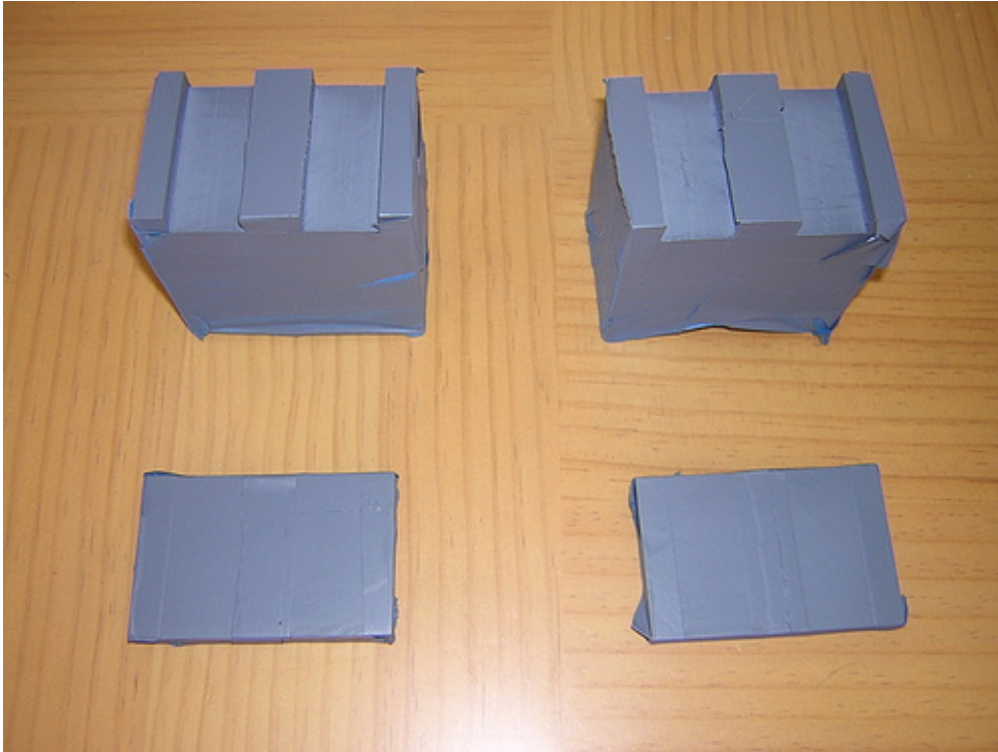
SUNDAY, MAY 28, 2006

## **Booster Cover Slot Primer, Started Working on Utility Arms**

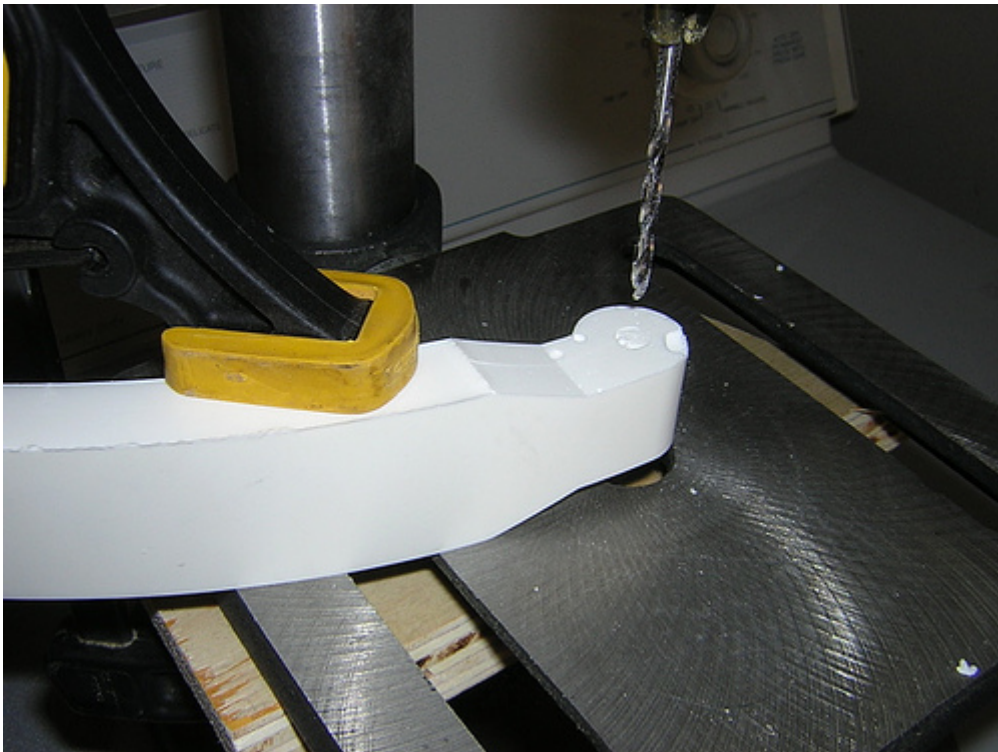
Today I was somewhat busy with other stuff, so I didn't get much done.

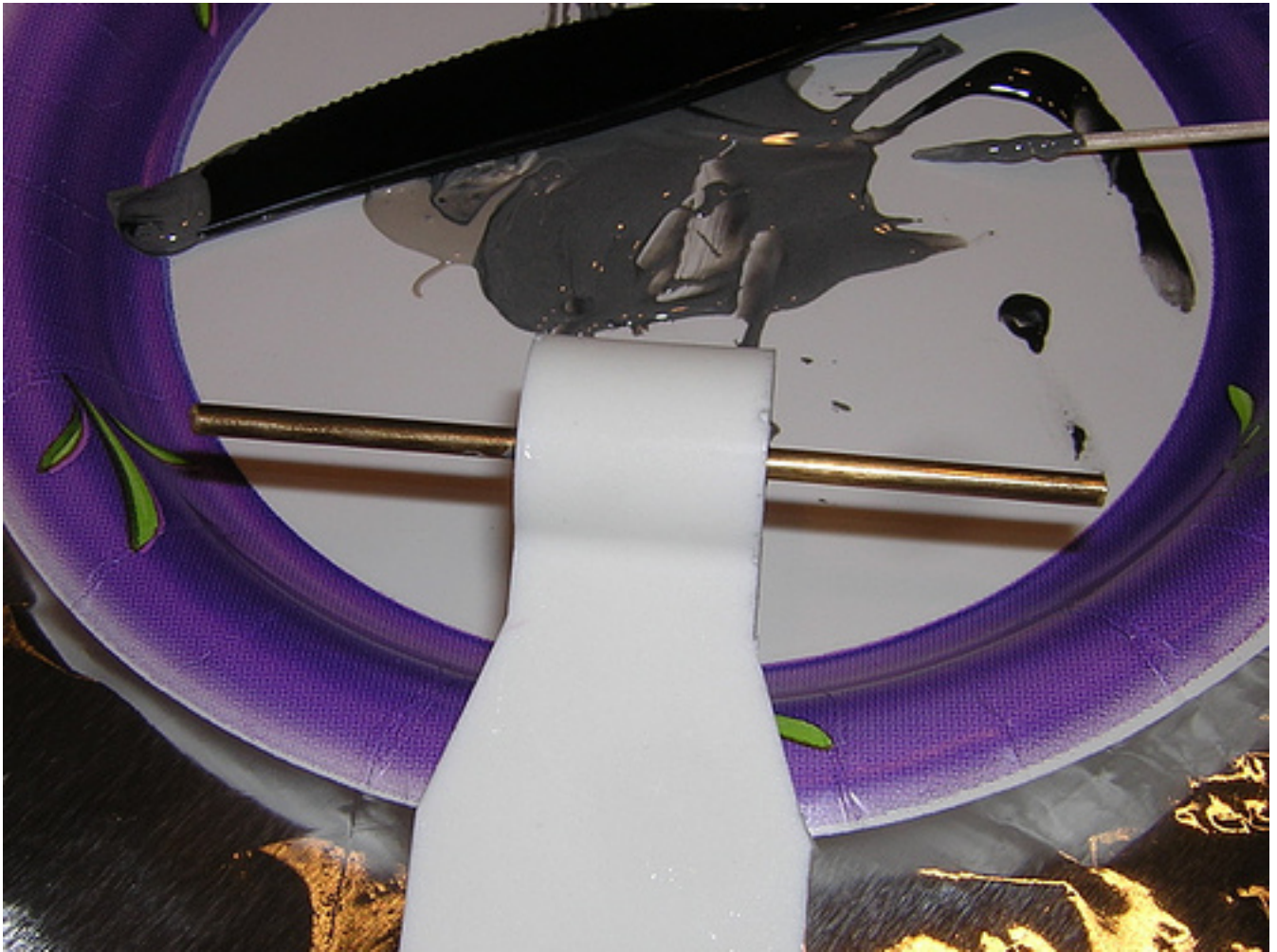
In the morning I applied some primer to the slots in the booster cover tops, so paint will stick better after these are glued back together.





In the afternoon, I started the first modest steps on the utility arms. I drilled 1/8" holes in the utility arm pivot points, and JB Welded 1/8" metal rods into them. These will be cut down to size soon.





*posted by Victor Franco at 8:43 PM* [0 COMMENTS](#)

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MONDAY, MAY 29, 2006

## **Booster Cover Slot Work, Trimmed Utility Arm Rods**

Once again I didn't get a whole lot done, due to other activities during the day.

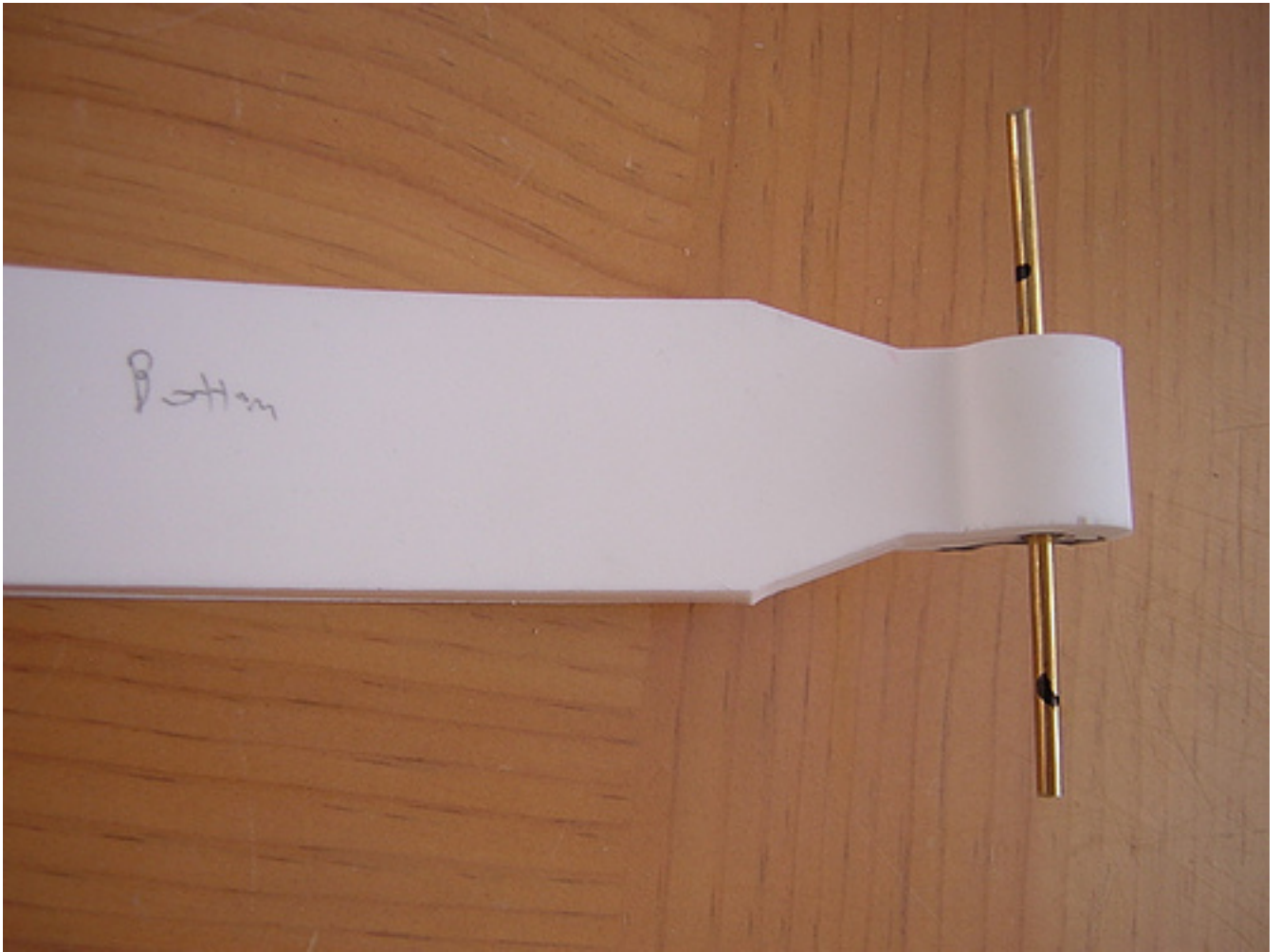
I've been going back and forth as to how I want the slots in the booster cover tops to look. Originally I was going to leave them empty, but that's not what the blueprints call for (nor is it how R2 really looks). I finally decided today to fill in the slots the way the blueprints specify, so I cut some MDF and sanded it to size. Then I hit it all with another coat of primer, in preparation for painting. I can't really do much more with these pieces until the paint is dry, and I glue the bases back onto them.





Later, I measured, marked and rough-cut the utility arm rods, and then iteratively test fitted and fine-sanded them to size.





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I don't think I'll have a chance to do any building tomorrow (Tuesday).

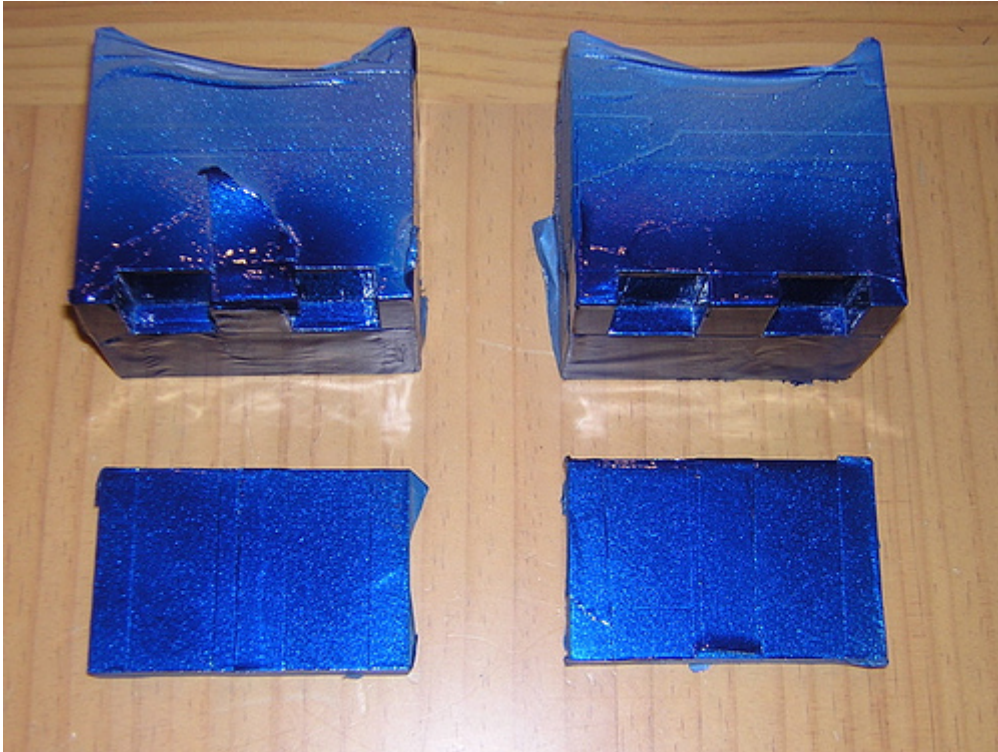
*posted by Victor Franco at 10:05 PM* [0 COMMENTS](#)

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WEDNESDAY, MAY 31, 2006

### Watching Paint Dry

This morning I painted blue the masked slots in the booster cover tops. Tomorrow I hope to glue the bases back on these so I can resume work.



In the evening I started sanding the portions of the utility arms that bump into the skins as they swivel open. I hope to finish that tomorrow too.

*posted by Victor Franco at 8:32 PM* 0 COMMENTS

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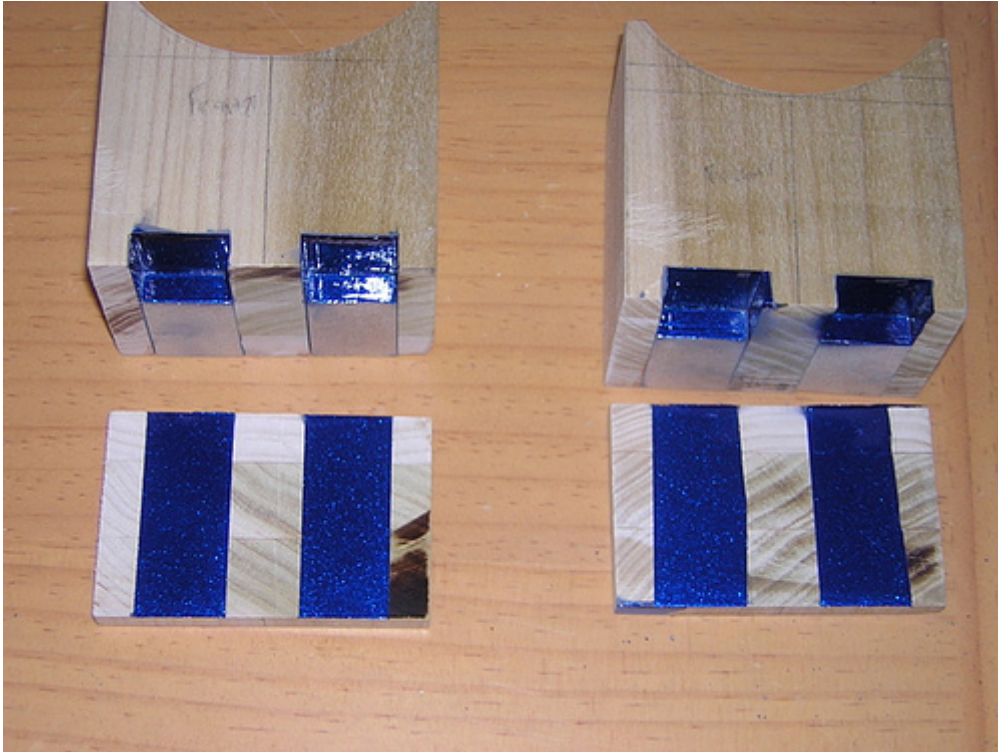
THURSDAY, JUNE 01, 2006

## Finished Sanding Utility Arms, Glued & Chopped Booster Cover Tops

In the morning, I finished sanding the utility arms so that they can swing freely open without hitting the skins.

I also was able to remove the masking tape from the booster cover tops, and glue the bottom part of these back on. How did I manage to do such a sloppy job of masking? Huh... oh well.



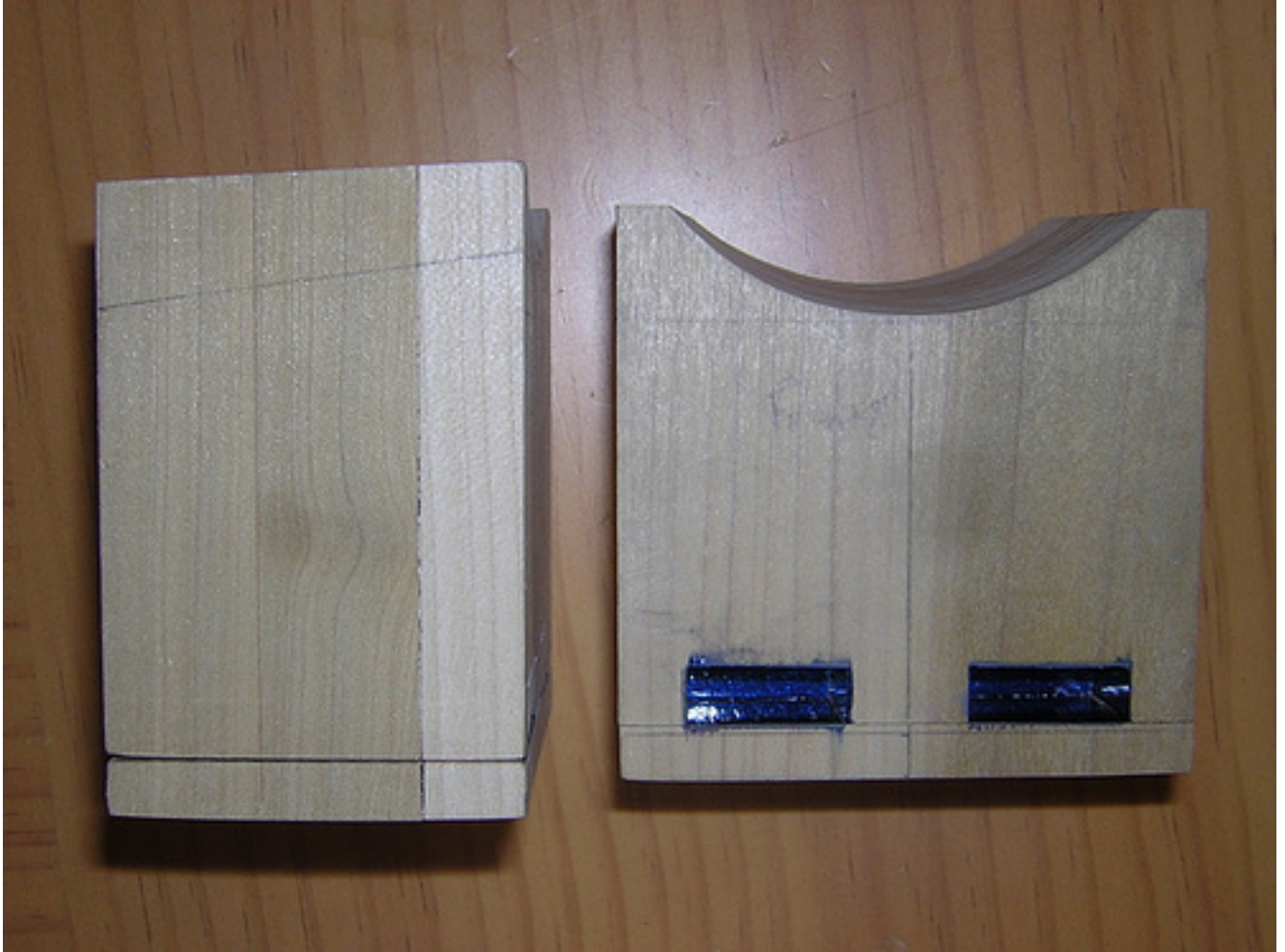


In the evening I worked up the courage to do some choppin' on the booster cover tops. The blueprints call for a 3 degree angle to be cut off the top. I practiced with the chop saw on a large piece of scrap, and then held my breath and cut the real booster covers.

Phew, it turned out fine.



The angle is pretty subtle, but it is there. Obviously a little wood putty will be in order once I'm done cutting.



I still need to route a curve out of the bottom-front corner, and cut 3 degrees off the front face of the booster cover tops, then the booster cover tops will be pretty much done (except painting and adding mounting screws).

*posted by Victor Franco at 9:39 PM* [0 COMMENTS](#)

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FRIDAY, JUNE 02, 2006

## Shoulder Hubs Arrive

I didn't get any building done today, but at least I have a little something to report. The shoulder hubs I ordered from Jason Smith's run arrived today. Yea!





I also ordered a set from Pat's run, but a bird in the hand...

*posted by Victor Franco at 9:32 PM* [0 COMMENTS](#)

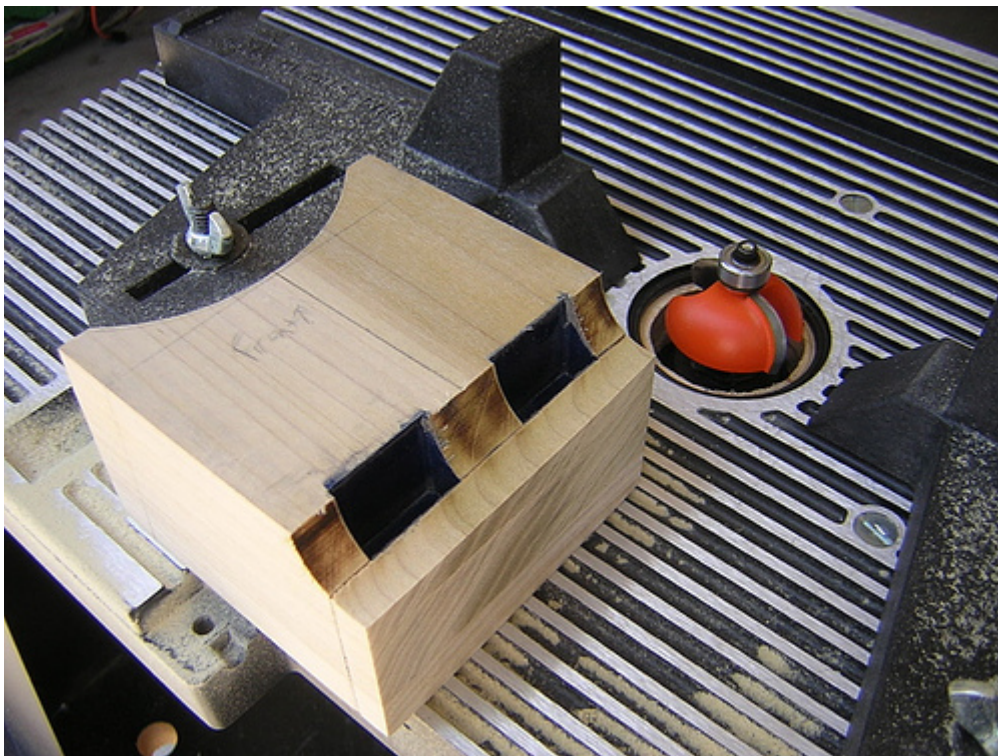
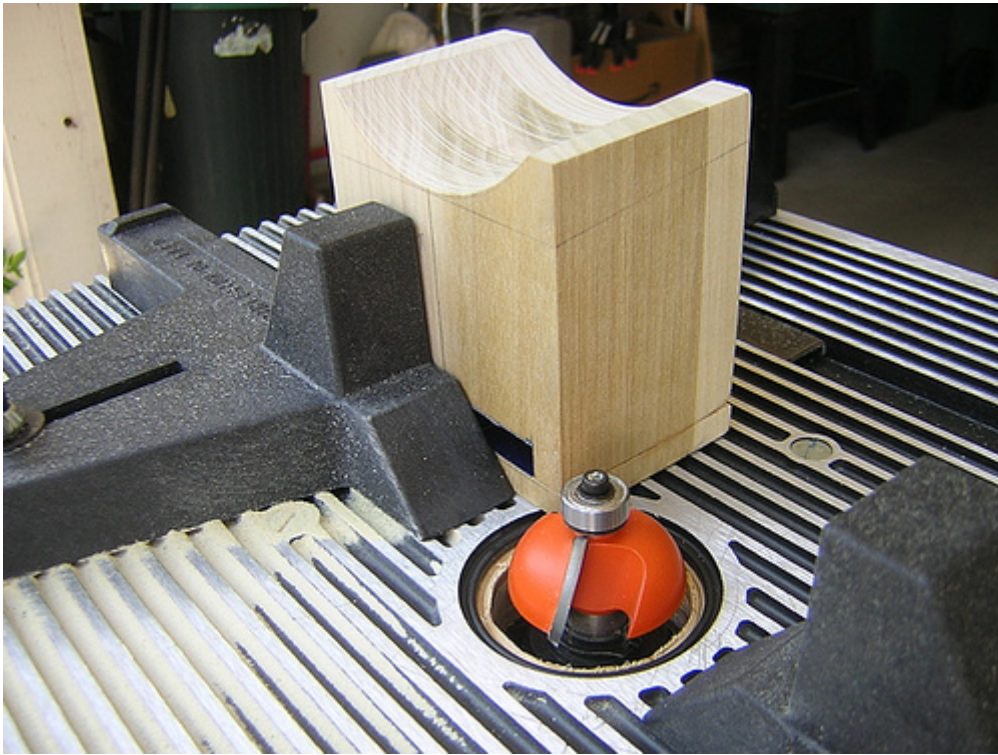
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SUNDAY, JUNE 04, 2006

## Lots of Booster Cover Work

After two conspicuous days of no building activity, I finally got back to work on the booster covers. (I was roasting in 100 degree heat at the Dodger game yesterday. I have no good excuse for Friday.) I was determined to finish the remaining major cuts on the booster covers. I literally held my breath during most of them, sometimes due to sawdust.

First up, routing out the 90 degree arc from the bottom of the booster covers. I used a cove bit for that.



So far, so good.

Next, I needed to cut 37 degree angles off the corners of the booster cover tops.



This part was really nerve-racking, because we are trying to achieve a very weird shape here when it's all done.



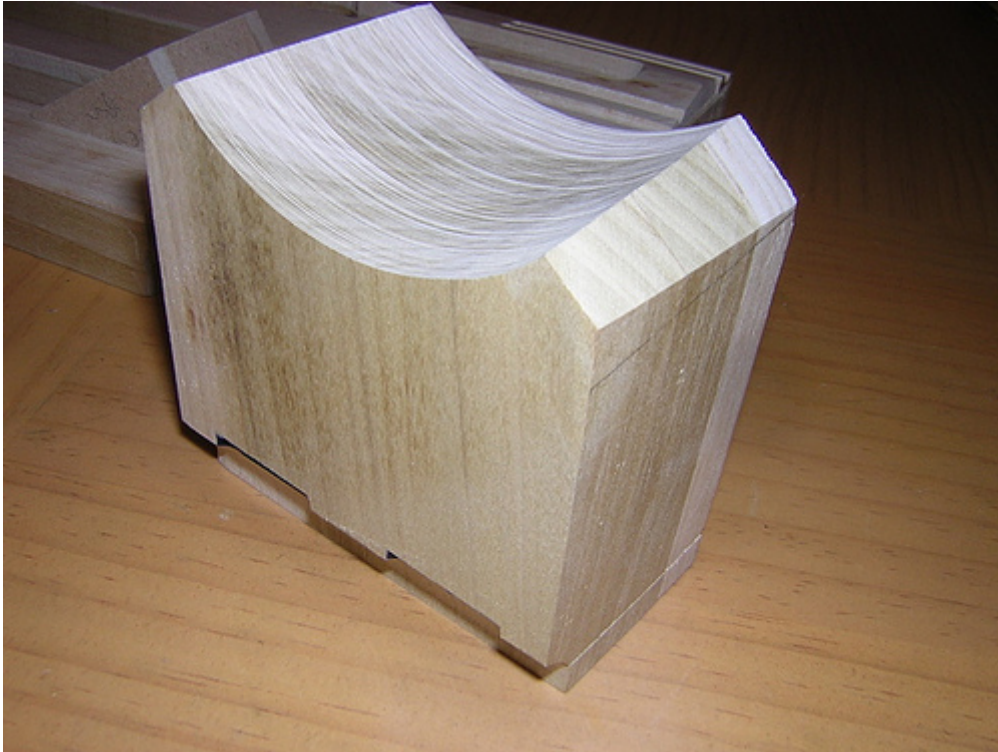




Wow, I can't believe how well that worked!

The blueprints call for a three degree angle to be chopped from the front face of the booster cover top (upper part sticks out further than the lower part). So once again I angled the table saw blade, clamped the piece upside down, and ran it through. More success.





The last item of business for the day was routing the grooves in the main part of the booster covers. I set up the fence and stop accordingly, and ran the booster covers through the router four times each (once for each groove).







The little bit of waviness at the bottoms will go away later on, when I chop the bottoms of the booster covers off to open up the "tuning fork." I still need to cut a groove around the main part of the booster covers too, but I'll wait until I know how the booster covers are mounted, so I can match the existing grooves on the legs.

I have to say I am really glad that the trickiest parts of the booster cover build are behind me, and I do feel a small sense of accomplishment having made it this far. A big thank you to all that have helped with booster cover tips and advice (Alan, pixelFiend, Mike and others), your input and encouragement are really appreciated!

*posted by Victor Franco at 10:20 PM* 0 COMMENTS

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TUESDAY, JUNE 06, 2006

## Sanded Curve in Booster Cover Top

When I routed the curve in the booster cover top on Sunday, I used a router bit with a 0.500" radius. The blueprints call for a 0.625" radius (depending on which version of the blueprints you refer to). I taped many layers of masking tape on a pipe with a 0.500" radius, increasing the radius to about 0.625", and started sanding away. A short time later, the curve was to size.



*posted by Victor Franco at 11:15 PM* [0 COMMENTS](#)

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WEDNESDAY, JUNE 07, 2006

## Puttied Booster Covers, Started Prepping Horseshoes for Mounting

Today I applied some Plastic Wood wood putty to seams and nicks on the booster covers. I'll sand them down tomorrow.

I also started thinking about mounting the horseshoes onto the legs. They will be held on with four #8 screws on each leg. I'm just planning where the screws will be located. I hope to get to work on these by the weekend.

*posted by Victor Franco at 10:46 PM* [0 COMMENTS](#)

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THURSDAY, JUNE 08, 2006

## Sanded Booster Cover Putty, Mounted Horseshoes

In the morning, I sanded down the putty that I applied yesterday on the booster covers. The booster covers are in pretty good shape now.

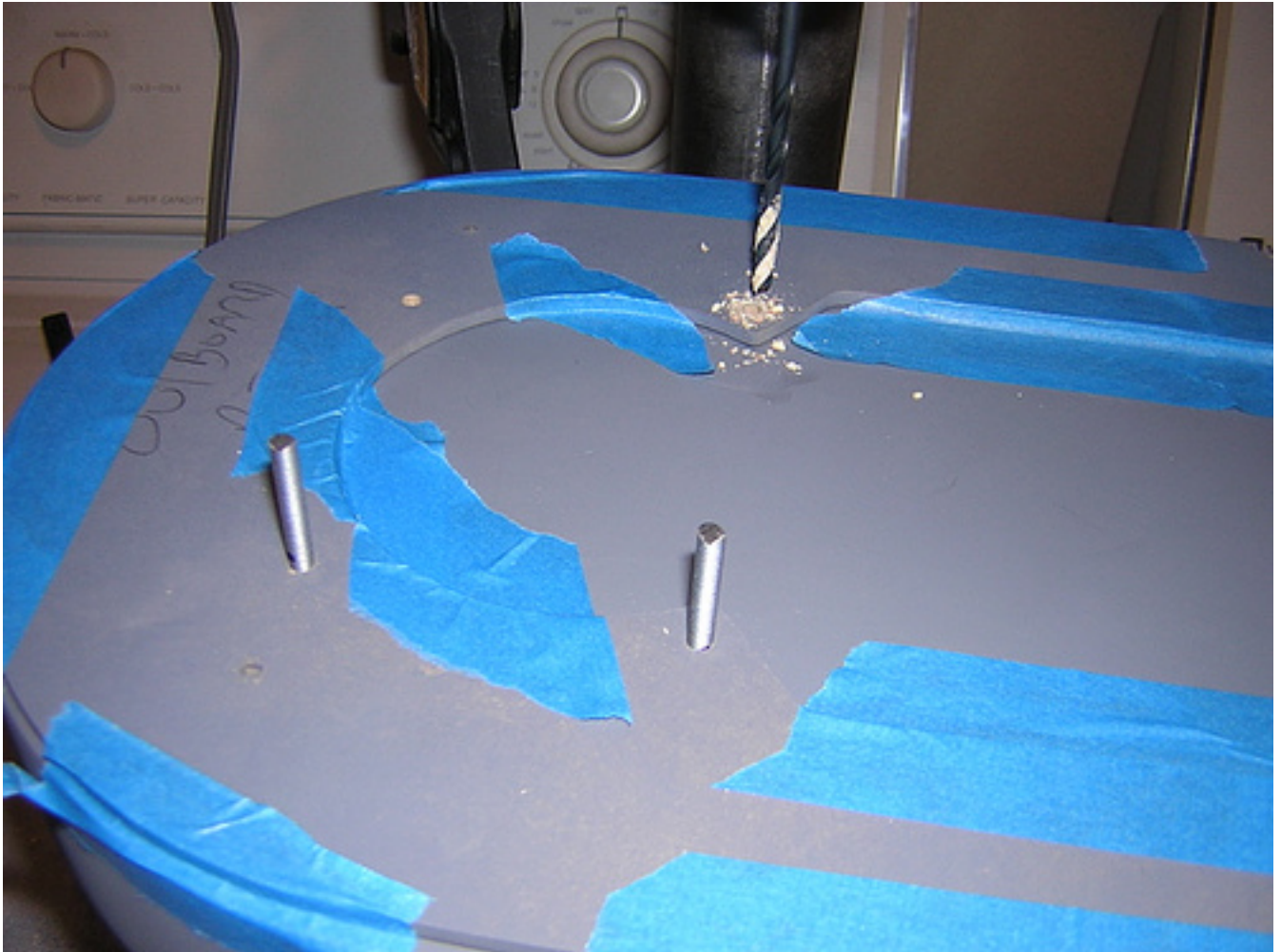
More significantly, in the evening, I mounted the horseshoes onto the legs.



I started by drilling four holes for #8 screws, about 3/4" deep into the inboard side of the horseshoes. The shim layer was taped down in several places on the main portion of the horseshoe.



I then took the shim layer, and taped it down (opposite side up) onto the leg. Lining up the drill bit with the holes that I had just drilled into the shim layer, I drilled matching holes into the outer face of the leg. As each hole was drilled, I placed a #8 screw (head cut off) into the hole, to secure the horseshoe into the leg and keep it from moving.



This came out pretty well. This weekend I'm hoping to cut the hole in the leg for the shoulder hub.



*posted by Victor Franco at 10:27 PM* 0 COMMENTS

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FRIDAY, JUNE 09, 2006

## Sanded Horseshoe Shoulder Hub Area, Started Gluing Supports for Utility Arms

The shoulder hubs I received from Jason are just the same size as the area in the horseshoes that they show through (which is good). However, I want to be able to pull the shoulder hubs out without removing the horseshoes, so I sanded the shoulder hub hole in the horseshoe a bit wider, to make removing the shoulder hub easier.

I also glued down the first piece of MDF that will help support the rod going through underside of the bottom utility arm.

*posted by Victor Franco at 9:48 PM* 0 COMMENTS

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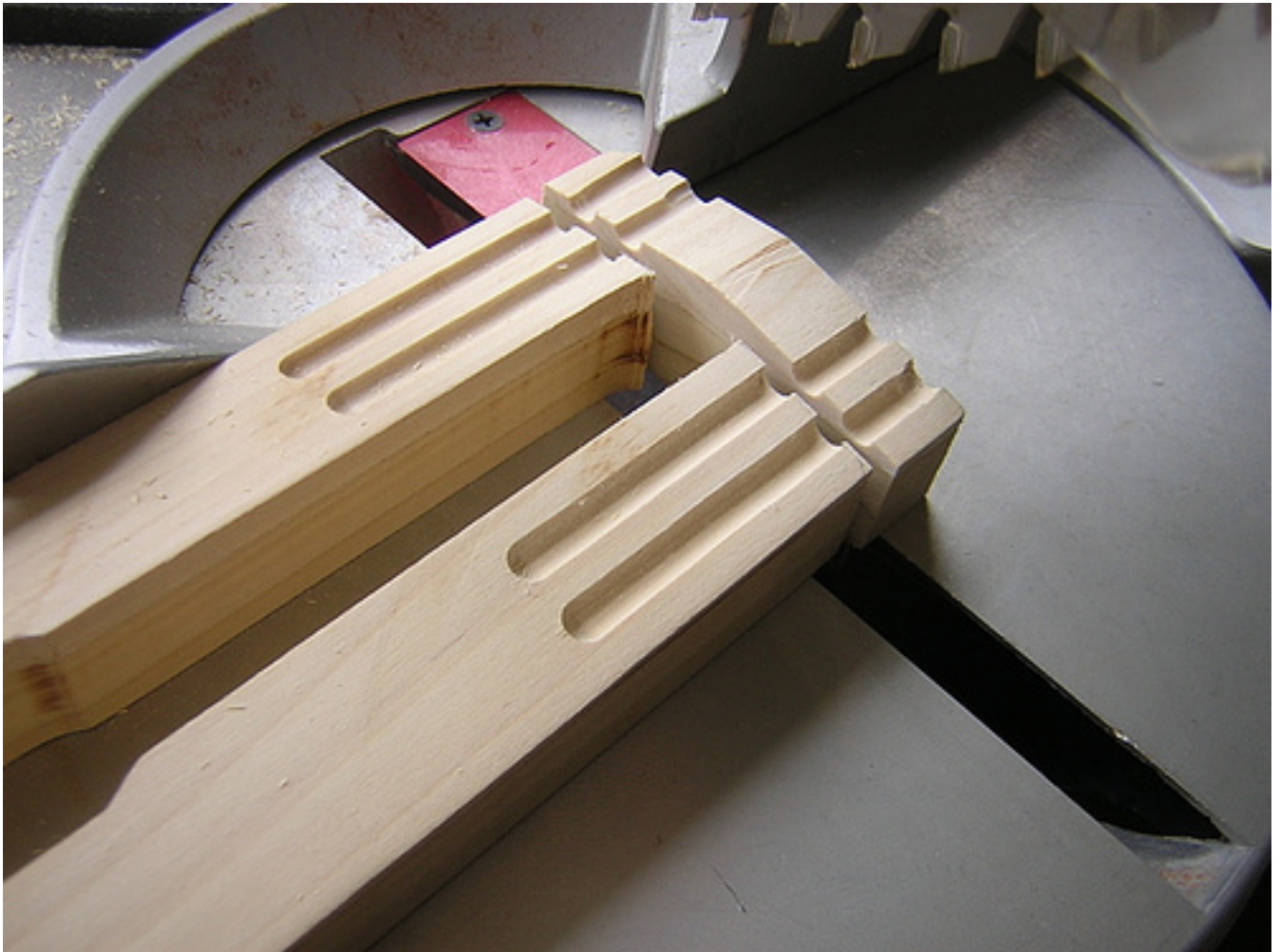
SATURDAY, JUNE 10, 2006

## Finished Cutting Booster Covers, Utility Arm Work

Today I was able to finish cutting the booster covers. They are nearing completion.



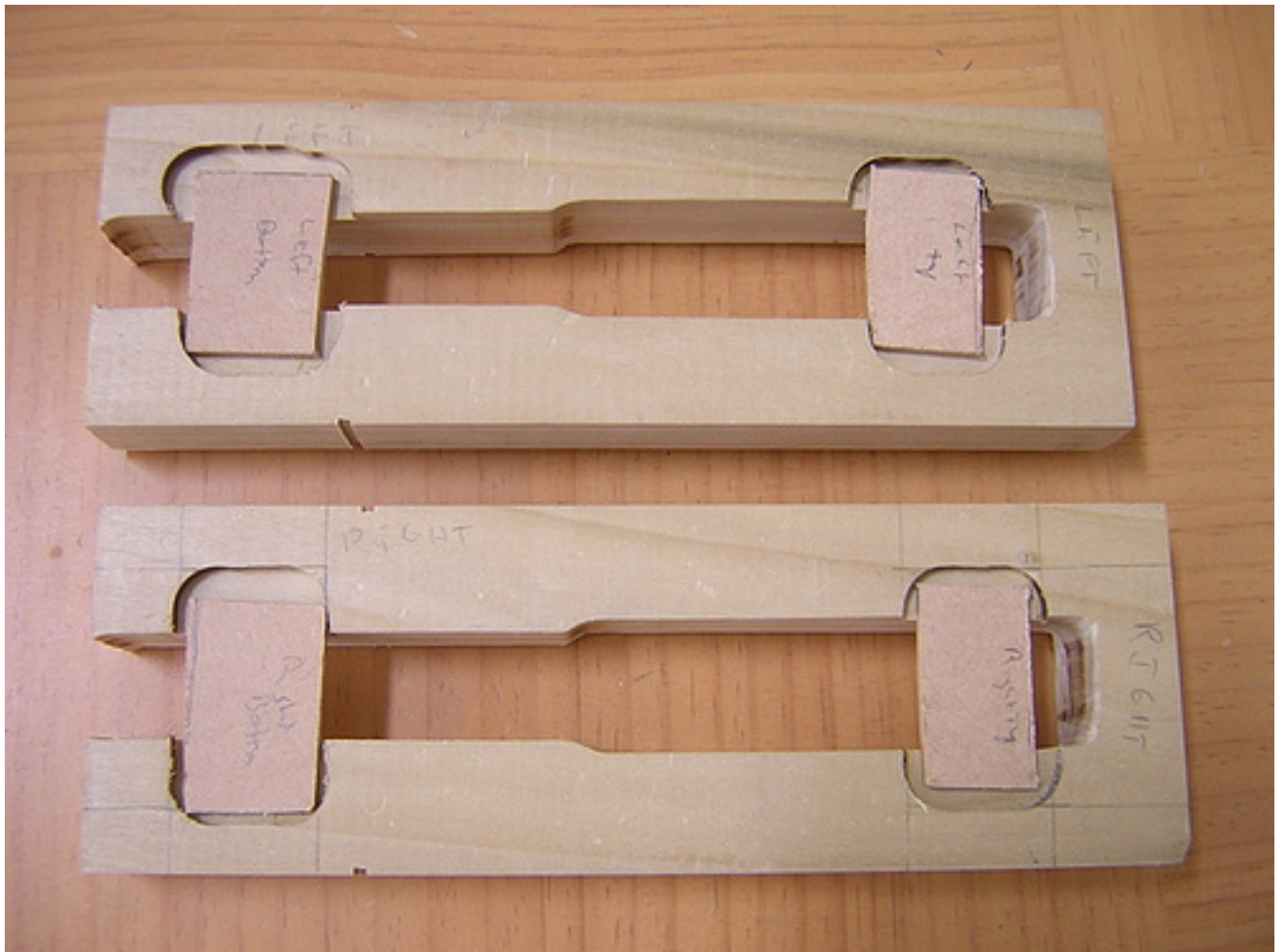
First, I chopped off the bottoms of the booster covers, finally opening up the "tuning fork."



Next, I cut the grooves in the booster cover bodies to match the grooves in the legs.



I wrapped up the cutting by routing areas in the back of the booster covers to accommodate the mounting of them on the legs. The plan is to glue down MDF in the routed areas, and then put a partial slot in the MDF, that will allow the booster covers to hang from screws in the legs. Picture a phone mounted on a wall and you should get the idea.

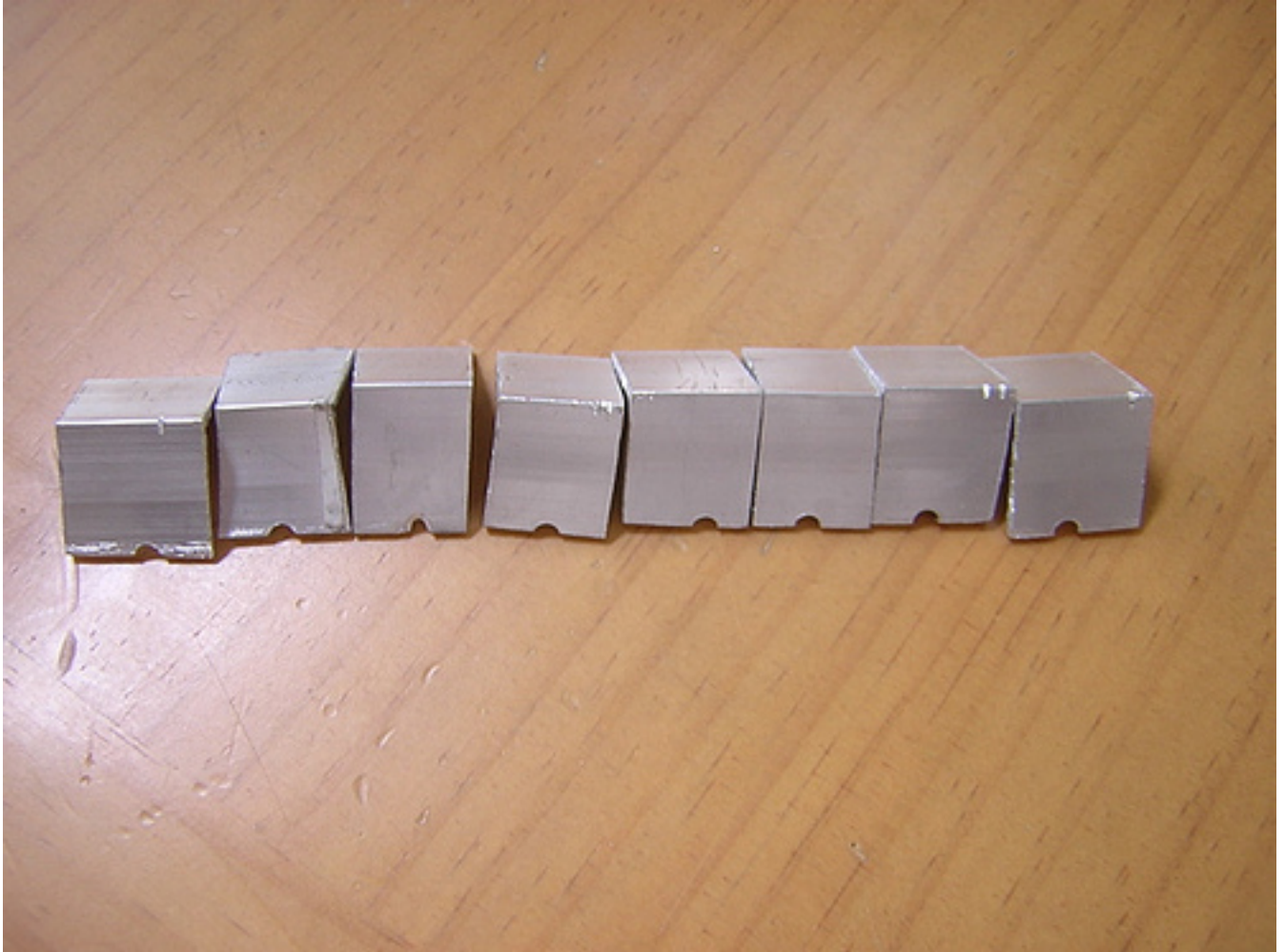


Of course, I had to dry-fit everything together to see how it looks. I haven't cut the holes in the legs for the shoulder hubs yet, so they just sit on top for now.





I also did some minimal work related to the utility arms. These are to be held in by a fixed piece of MDF, and a screwed-down piece of aluminum stock. Each of these pieces will have half of a circle cut out of them, supporting the rod that goes through the pivot point in the utility arms. I cut eight pieces of aluminum total, but I really only need four. I figured it couldn't hurt to cut extras, especially since some of them didn't turn out so great.



Finally, in order to support the arm swiveling open via a servo, I plan to insert a rod with a hole at the end that will be attached to the servo via a paper clip or something. This rod will go into the pivot end of the arm. I only cut the hole in the rod and cut the rod down to size, I haven't drilled the arms to accommodate this rod yet.



*posted by Victor Franco at 9:26 PM* 0 COMMENTS

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SUNDAY, JUNE 11, 2006

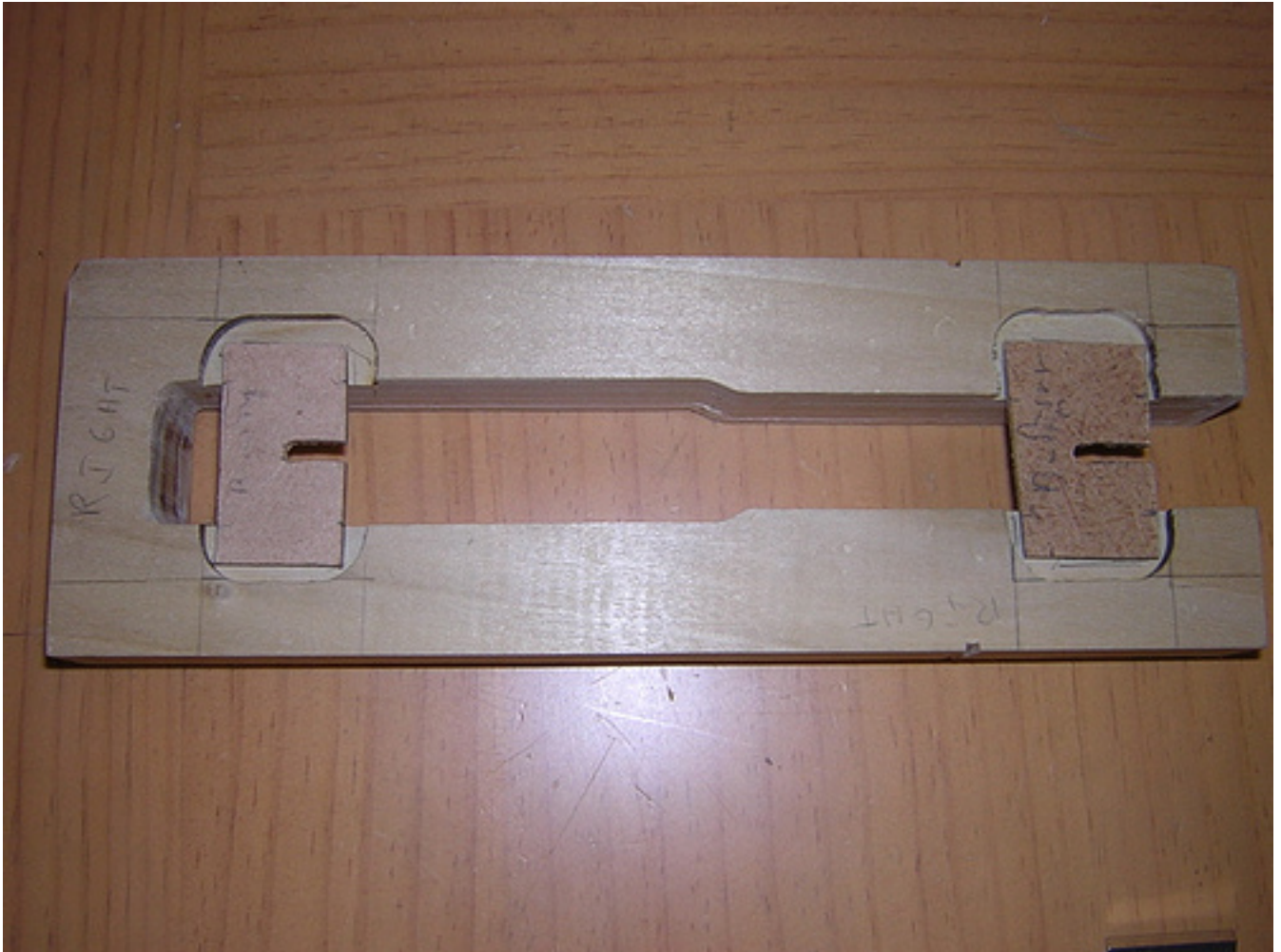
## Notches for Booster Cover MDF Started

Talk about having hardly anything to report...

I started cutting the notches in the MDF that will help support the booster covers on the legs. I'm so lame, I had to redo these a couple of times! Getting the width just right, and getting the cut straight, appears to be beyond my competency.

I still have to cut the notches on the MDF for the other leg. I'm planning on using #8 3/4" wood screws to fit in the notches.





Part of the reason I got so little done today is that I ran up to Mike Senna's, to discuss how to cut the holes in the legs for the shoulder hubs. This is actually very tricky and somewhat complicated. I'll explain in more detail when I get there, hopefully by next weekend.

*posted by Victor Franco at 10:03 PM* 0 COMMENTS

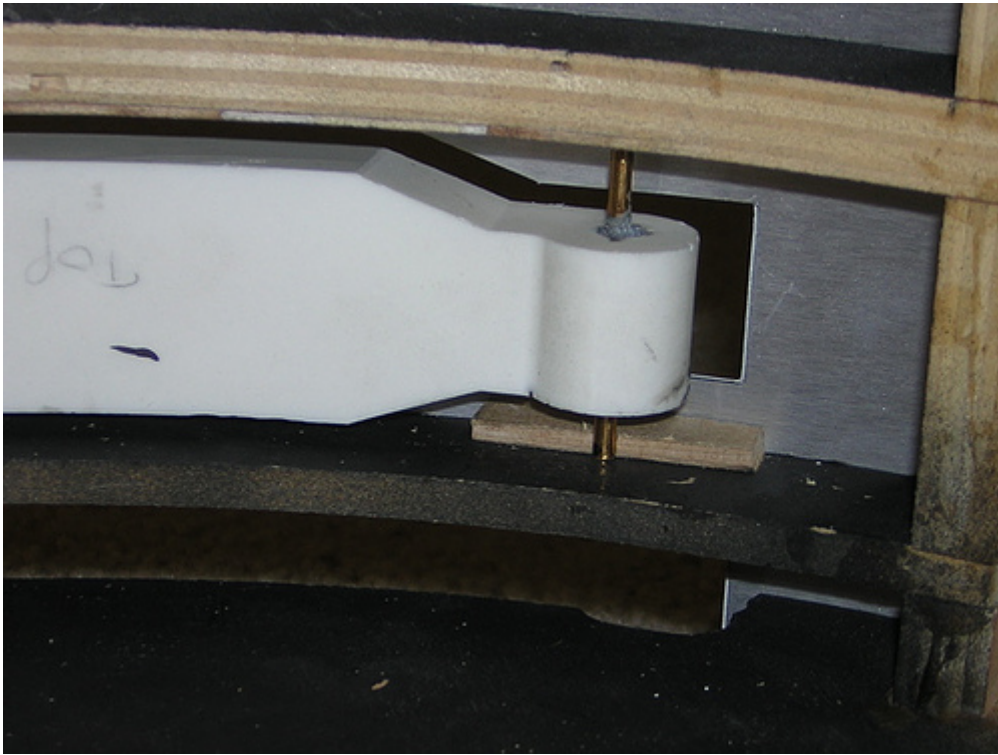
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MONDAY, JUNE 12, 2006

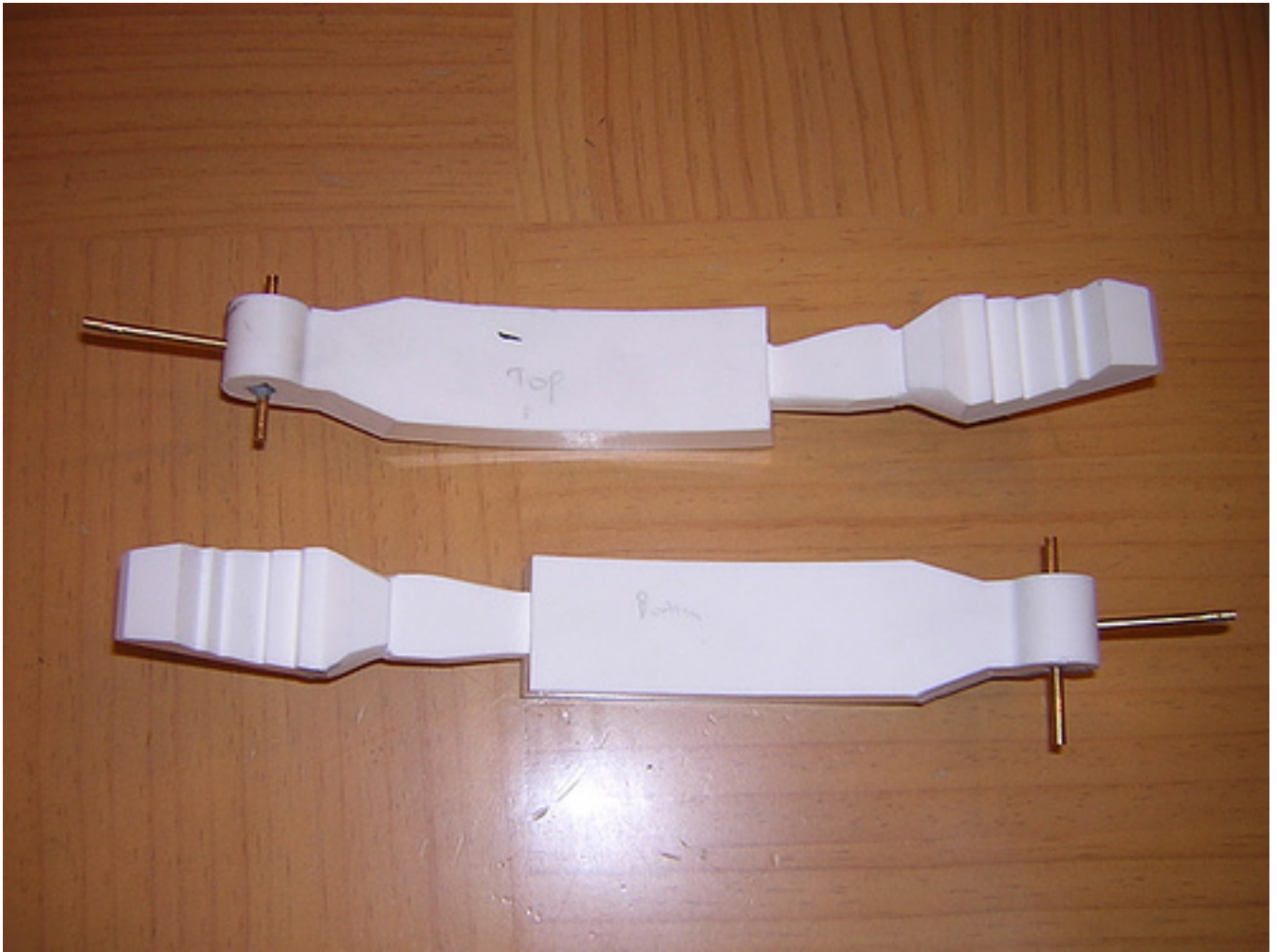
## **Finished Booster Cover MDF Notches, Utility Arm Work**

I finished notching the last two pieces of MDF for the booster cover mounts (they look just like yesterday's work).

With the dome and legs removed, I turned the body upside-down and glued in the upper piece of MDF that will hold the top utility arm in place. It was mildly amusing to have R2 upside down and be able to spin him around on the lazy susan Rockler bearing (evidently, I'm easily amused).



I also drilled holes in the ends of the utility arms for the servo arm bars that will protrude from them. These are the bars from this past Saturday that have a tiny hole drilled at the ends. I haven't JB Welded the bars in place yet, I probably need to shorten them up a bit first, so they don't run into any internal vertical ribs.



*posted by Victor Franco at 10:19 PM* 0 COMMENTS

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TUESDAY, JUNE 13, 2006

## Finished Mounting Top Utility Arm

I was able to drill the aluminum channel and secure the top utility arm today. Recall that the rod running through the pivot point of each utility arm is held in by MDF and aluminum channel. The MDF and aluminum channel both have half of a 1/8" circle drilled out of them (thus making a circle), in which the 1/8" rod rests. The two materials squeeze together around the rod.





Hopefully I can make some progress on the bottom utility arm tomorrow.

*posted by Victor Franco at 11:28 PM* 0 COMMENTS

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WEDNESDAY, JUNE 14, 2006

## **Finished Installing Bottom Utility Arm**

This morning I glued in the remaining MDF to support the bottom utility arm, and this evening I drilled and screwed down the aluminum channel to hold it in place.



Hmm. The pivot point of the bottom arm seems to be sitting a bit deeper into the body than I intended. I may have to live with it, as the pivot rod's MDF-half of the support is glued down now.

*posted by Victor Franco at 10:58 PM* 0 COMMENTS

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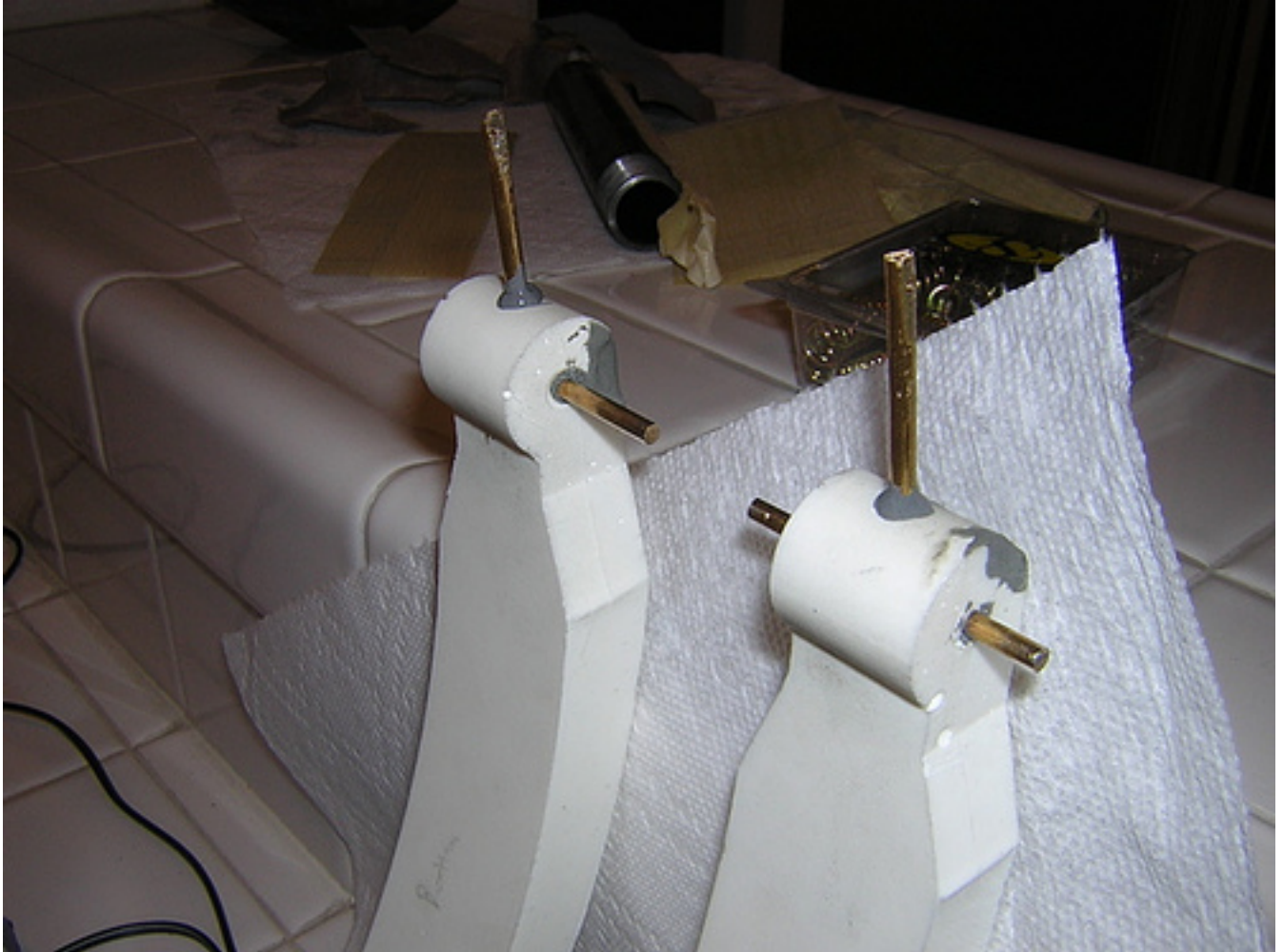
FRIDAY, JUNE 16, 2006

## Shoulder Hub Template Prep, JB Welded Servo Rods in Utility Arms

In the morning I did a little work in preparing my shoulder hub template for cutting tomorrow. This is mainly an experimental template, I don't fully expect that the hubs will fit perfectly on the first try. We'll see.

In the evening I trimmed the rods that will go in the ends of the utility arms for the servos that will open the arms, and JB Welded the rods into place.

The JB Weld that looks like it dripped in other areas is actually left over from when I was filling in small gaps and voids in the resin, when I JB Welded in the pivot rods.



*posted by Victor Franco at 10:21 PM* 0 COMMENTS

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SATURDAY, JUNE 17, 2006

## Painted Utility Arms, Cut Shoulder Hub Template

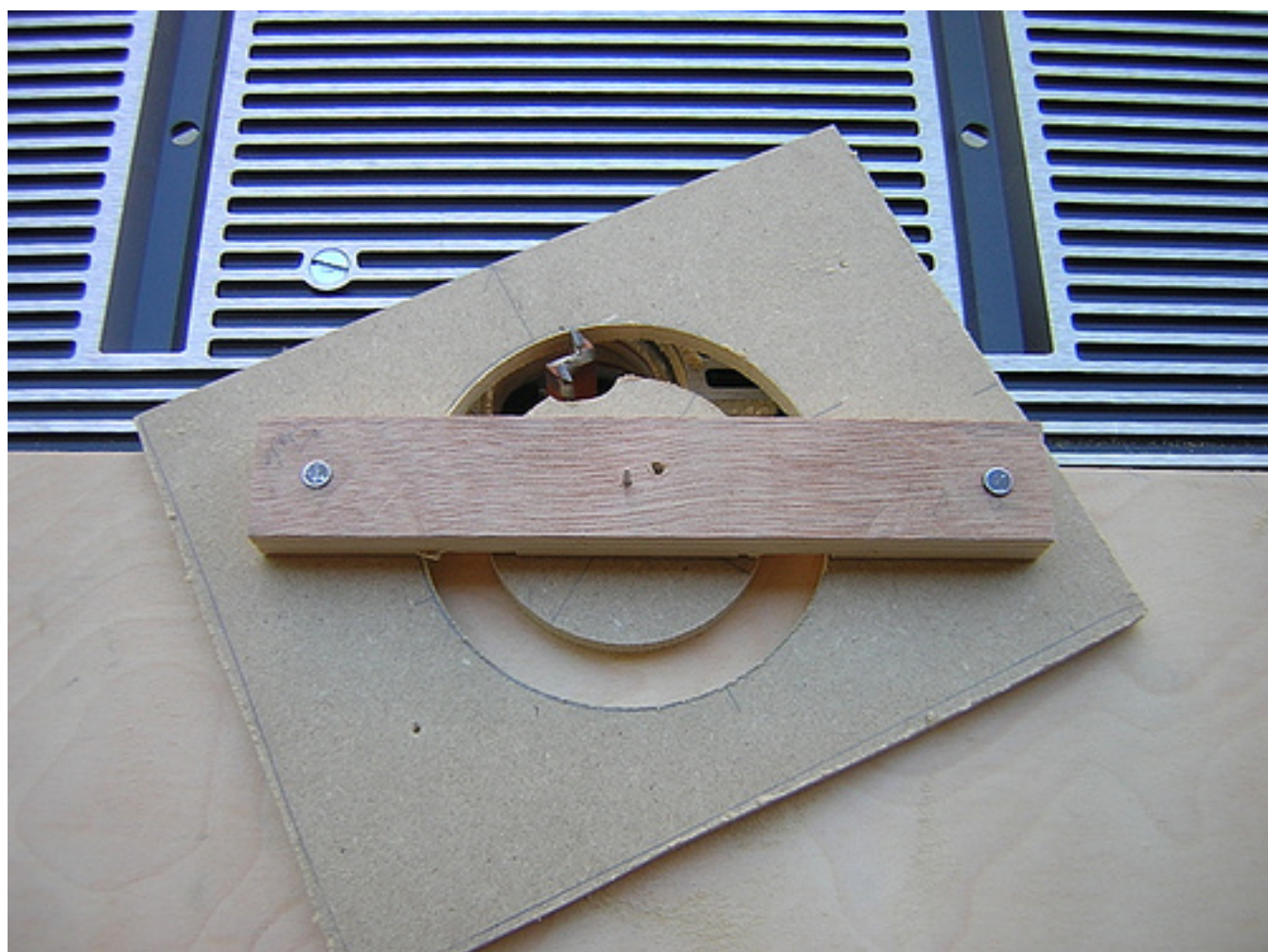
Today I painted the utility arms. I enjoyed it so much, I painted them twice. The first time I dropped them on the lawn. D'oh!! After a soaking in acetone and a cleaning, I repainted them later in the day.



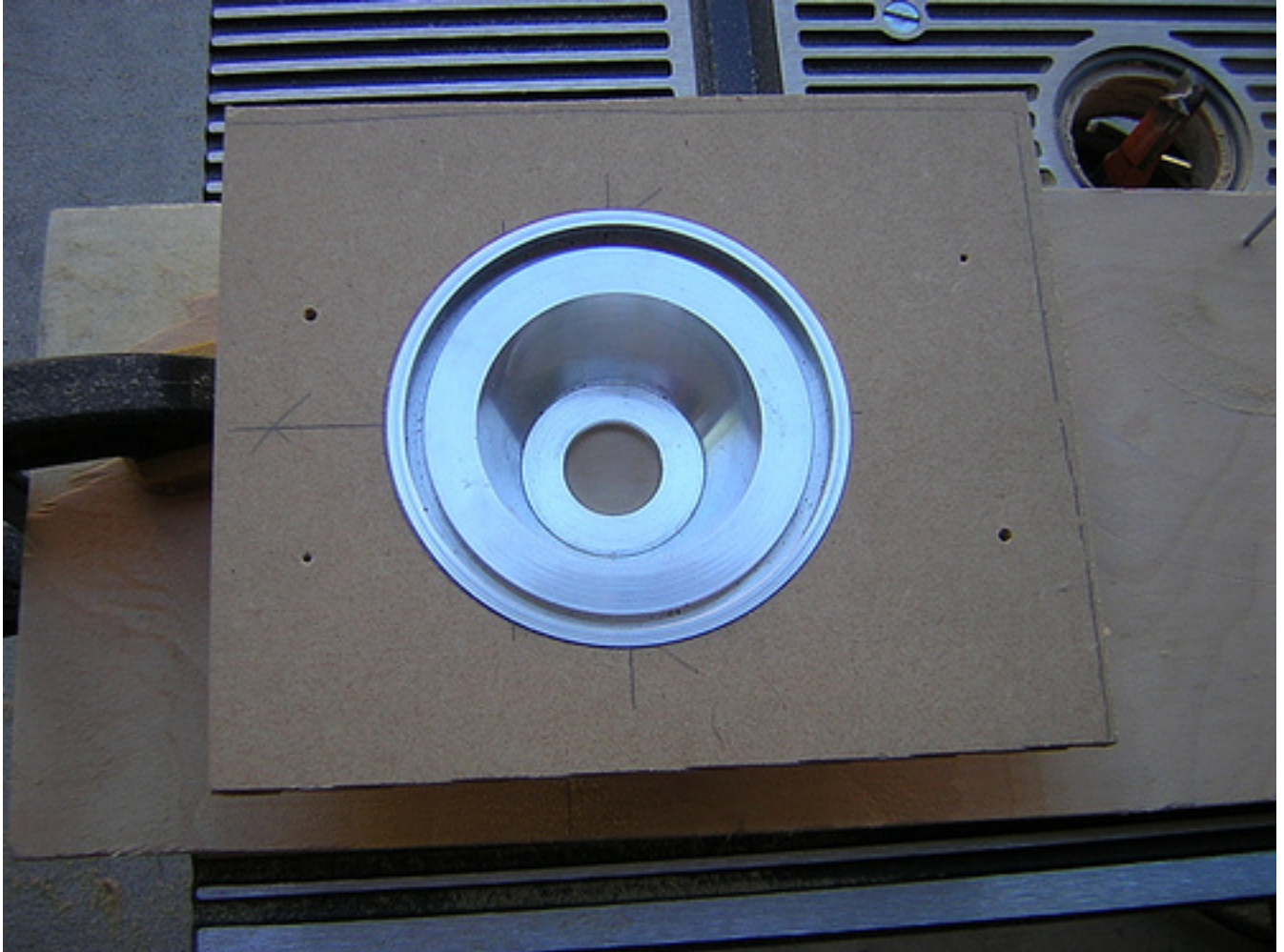


I also cut out my MDF template for routing the shoulder hub holes to size in the legs (I still need to do the rough-cut in the legs first). The hub fits snugly in the template, just the way I want it. I will nail the template to the leg, and use a flush-cut bit to finish the shoulder hub hole in the leg after I have rough-cut it.

It actually took me three tries to get the hole the perfect size (twice I went a hair too wide on the radius), but I had anticipated that on this template.







*posted by Victor Franco at 10:54 PM* 0 COMMENTS

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SUNDAY, JUNE 18, 2006

## Tested Shoulder Hub Template, Mounted Template to Arm

Not much at all got done today due to other commitments.

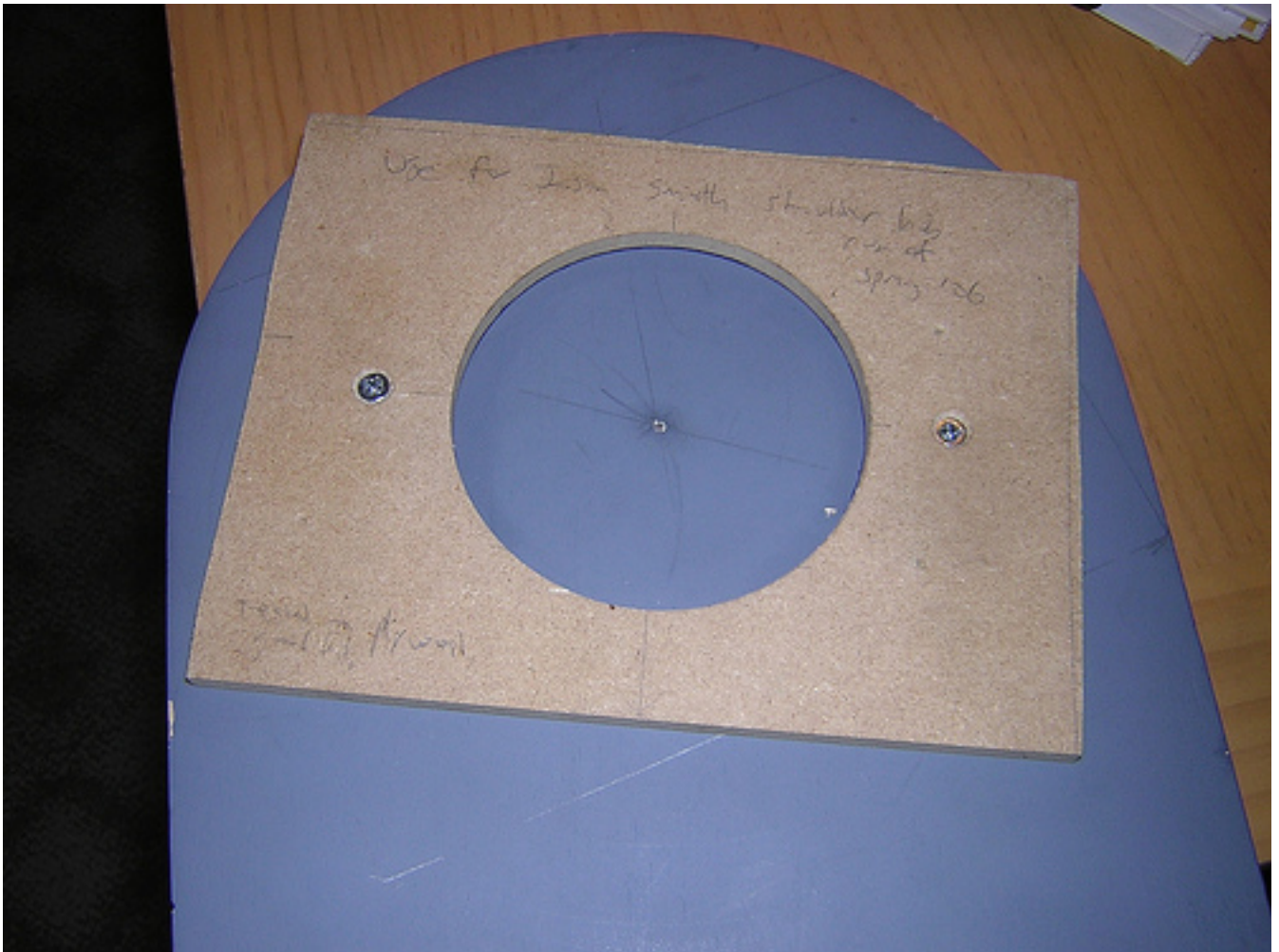
I tested my shoulder hub template on some 1/2" scrap plywood, the same kind that makes up the top layer of the legs that I will be cutting and routing. I'm glad I tested, because I found that my "final" template from yesterday made a hole in the plywood that was a bit too snug for the aluminum hub to fit through. I went to my next larger template, and found that when I used it on the plywood, the fit of the aluminum hub was nice and snug, so I'll be using that template.

Next, I spent a lot of time trying to locate exactly where on the left leg to locate the template. I did this repeatedly, by installing the horseshoe on the leg, drawing



an outline of the partial circle that the inner part of the horseshoe forms, and then trying to center the template within the horseshoe's partial circle. A couple of times I thought I had it, and screwed the template down, only to discover it was slightly off. So I'd unscrew the template, rotate it slightly, and try again.

I tried a few different strategies for centering, including drawing concentric circles from a common centerpoint, but whenever I mounted the template, I'd find that I was off by maybe a millimeter. Finally, with the horseshoe mounted, I used a ballpoint pen to trace the outline of the partial inner circle. The line was offset a small distance from the edge of the horseshoe, and that provided the guidance I needed to center the template where it should be (I hope).



I still have to go through all this again with the right leg, and I need to jigsaw-out a rough cut on the legs before I can actually use the template. I'm going kind of slow here, because I really need to get this right, or the hub won't easily come out of the arm.

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*posted by Victor Franco at 11:32 PM* 0 COMMENTS

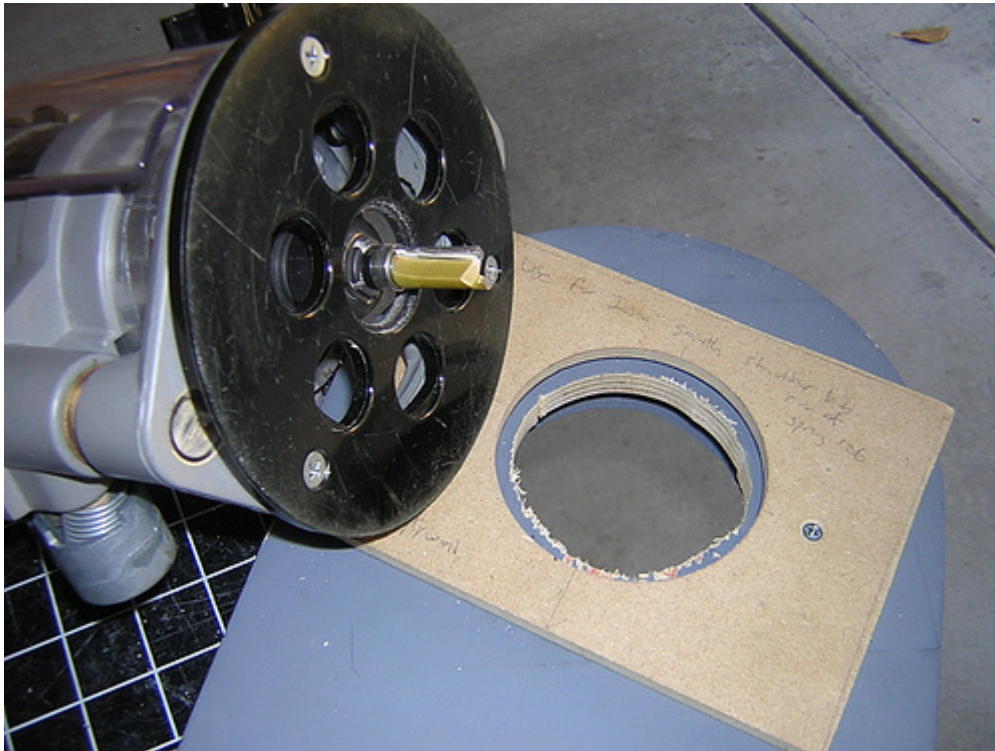
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MONDAY, JUNE 19, 2006

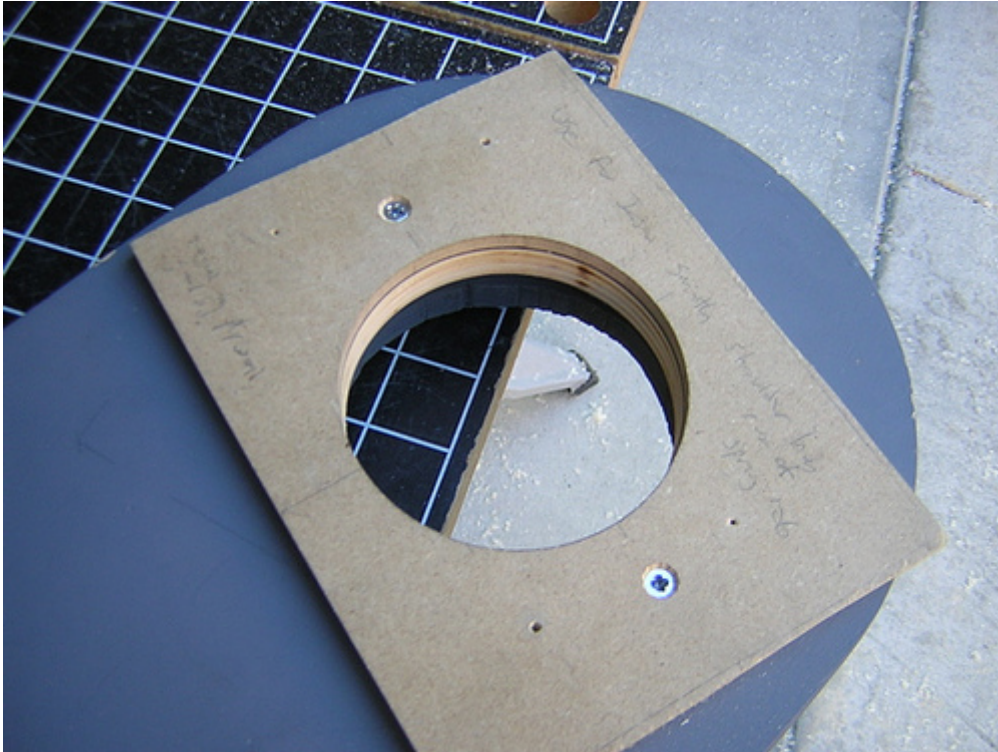
## Cut & Routed Left Shoulder Hub Hole, Installed Painted Utility Arms

The stakes just keep getting higher as work continues on the legs. It was time to cut and route the shoulder hub hole. If I messed this up, it probably would have ruined the leg. I actually felt a bit queasy as I started work.

First, I rough-cut the shoulder hub hole, in preparation for routing the hole to size with the router. The flush-cut bit used for the routing has the bearing on top, to ride along the inside of the MDF template that is screwed down to the top of the leg.



I routed the hole to size, and could finally exhale. The cut ended up just the way I needed it to be.



Once I unscrewed the template, I test fitted the hub in the leg. It fit pretty well, so I'm happy with it. More important, the hole for the hub is exactly centered in the horseshoe opening, which is what I was really stressing over.





Now that the paint has thoroughly dried on the utility arms, I was able to reinstall them in the body. I still don't like how far back the pivot point of the bottom arm sits, I may have to figure out a way to correct that some time later.



I wrapped up by preparing the right arm for shoulder hub hole cutting, I may not be able to get to that until Wednesday. We'll see.

*posted by Victor Franco at 9:39 PM* [0 COMMENTS](#)

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TUESDAY, JUNE 20, 2006

## Cut Shoulder Hub Hole in Right Leg

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I only had 1/2 hour after work to get anything done, but that was enough time to successfully cut the shoulder hub hole in the right leg. Like the left leg, the hole and the aluminum shoulder hub fit well, and the hole is directly centered in the horseshoe.

Phew! Glad that's behind me.



*posted by Victor Franco at 6:53 PM* 0 COMMENTS

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WEDNESDAY, JUNE 21, 2006

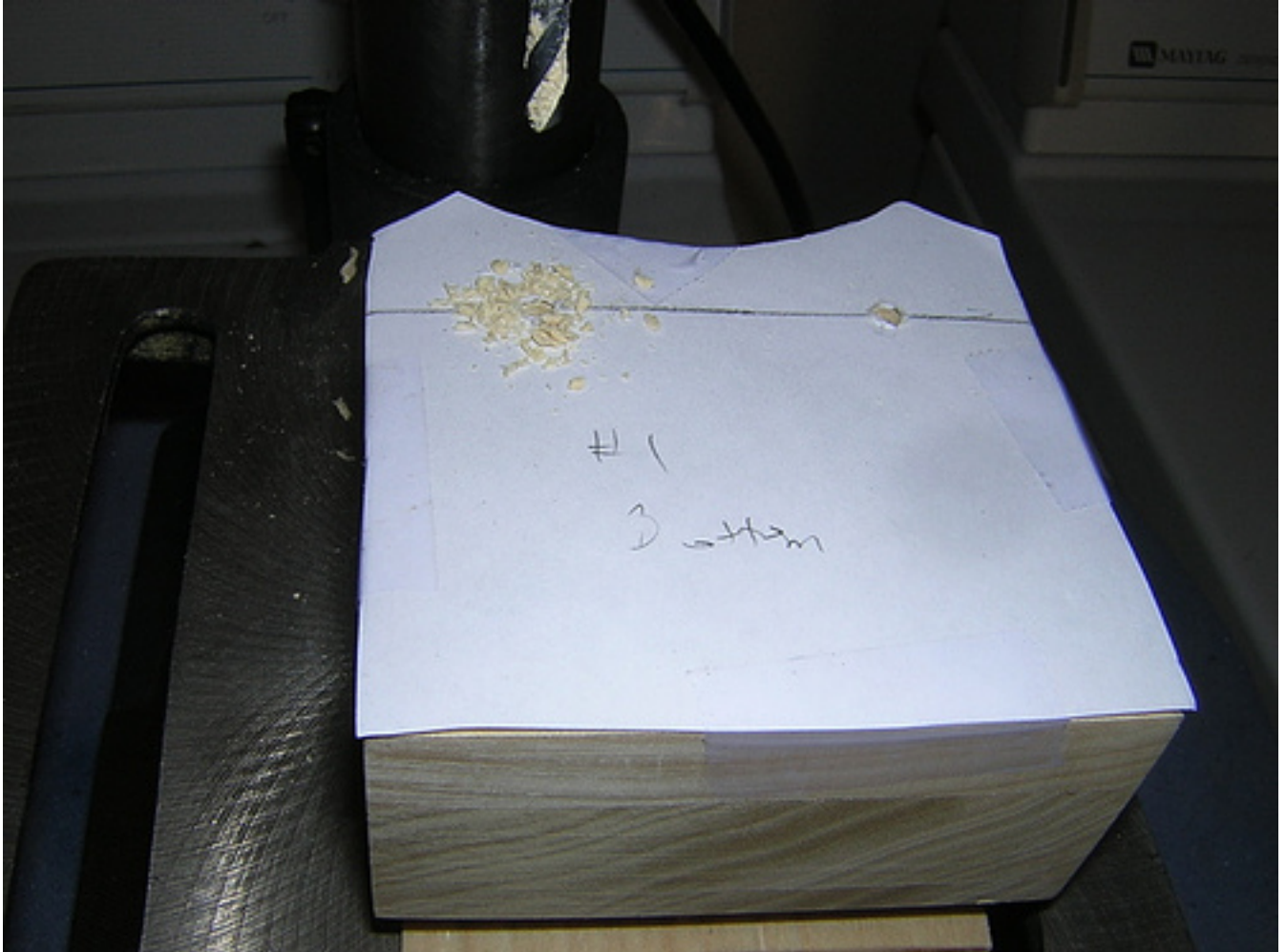
## **Screws for Booster Cover Tops, MDF Glued In for Booster Cover Backs**

Now that the shoulder hubs holes are complete, I was able to get to work on placing the booster cover assemblies below them.

I laid the tops of the booster covers down on plain paper and traced them, and

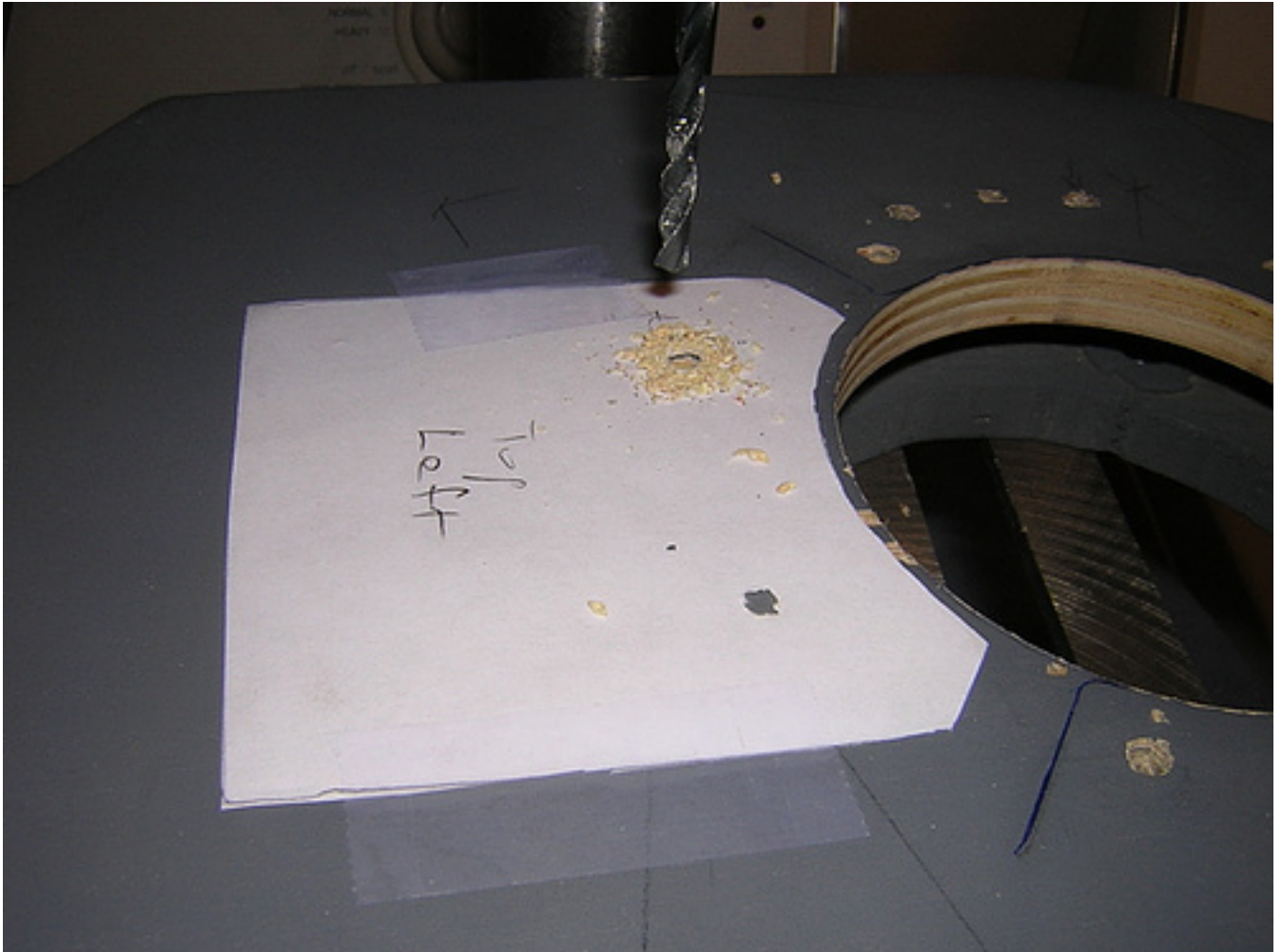


then cut out the tracings. I taped the tracings onto the booster cover backs, and drilled holes through the paper and into the backs of the booster covers, for the screws (heads cut, off as usual) that will go into the legs to mount the booster cover tops.



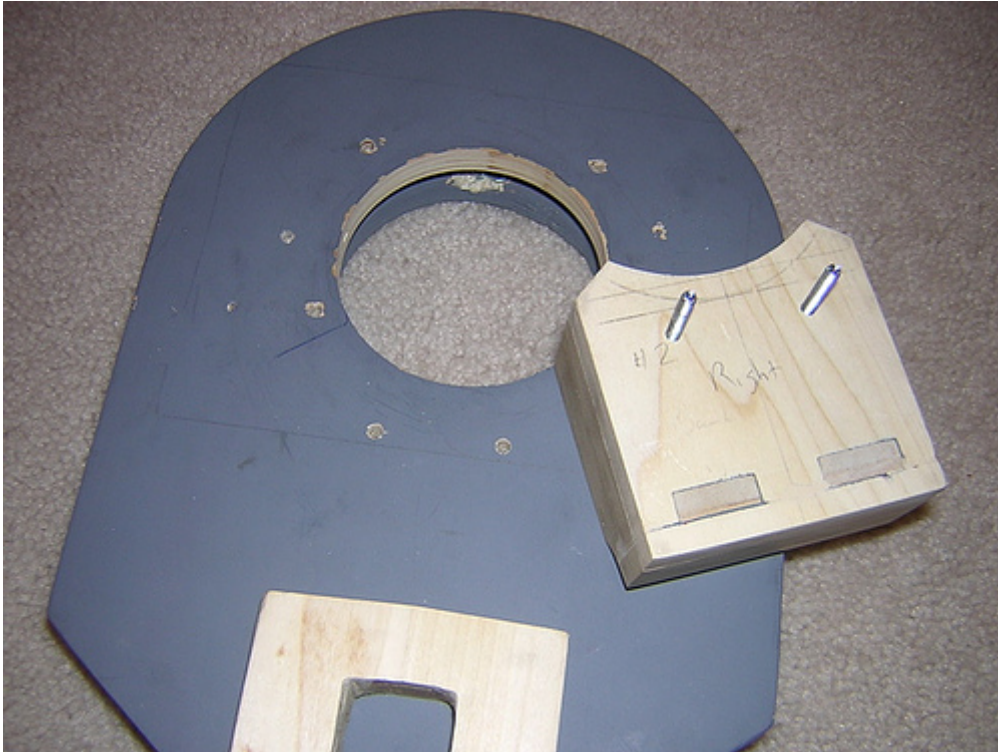
Next, I took the tracings off of the booster cover tops, and used them to locate where on the legs I needed to drill corresponding holes. I placed the main portion of the booster covers down, and then centered the tracings under the shoulder hub holes, as the bottom of the tracings sat down against the tops of the main booster cover bodies for each leg.

Once I was happy with the location of the tracings, I taped them down, took the legs to the drill press, and drilled the holes in the legs through the pre-existing holes in the paper tracings.



Even if these holes had mismatched slightly, it would not have been tragic, as they can be widened a bit. Since the screws will have nuts holding them in, they can be scooted over a bit without complication.

I inserted the screws in the backs of the booster cover tops, and gave test fittings. Luckily, all went well.



Finally, I glued down the MDF mounting slots for the main booster cover bodies. Hopefully I can screw those down in place tomorrow.





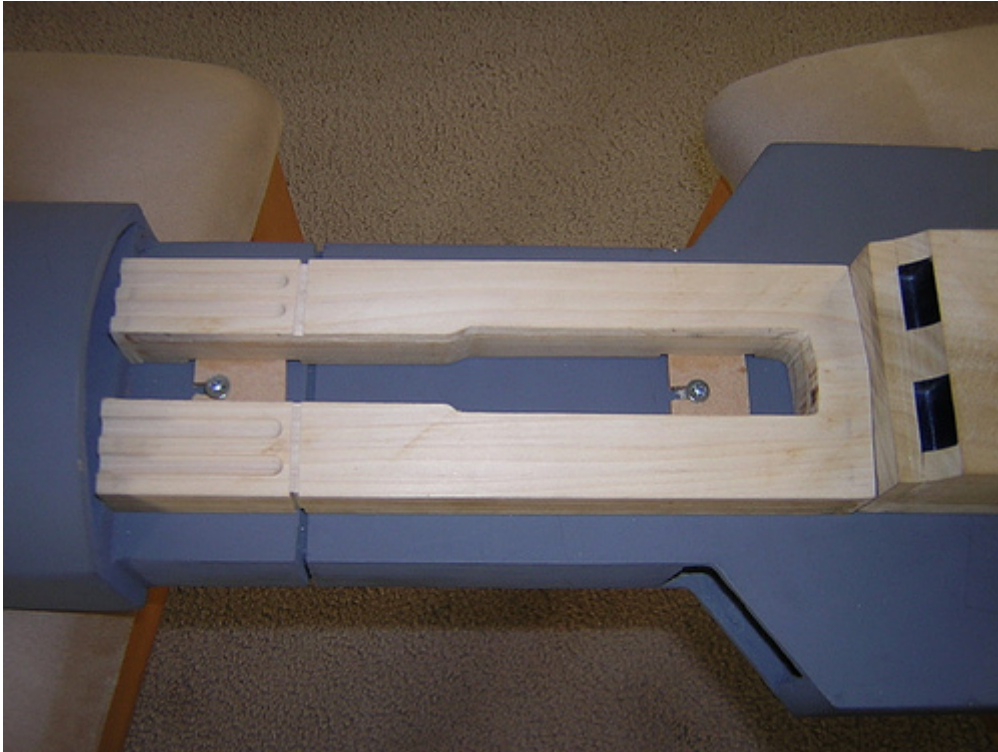
*posted by Victor Franco at 10:46 PM* 0 COMMENTS

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THURSDAY, JUNE 22, 2006

## **Attached Booster Cover Bodies, Shoulder Hydraulics & Bottom Buttons**

After the glue holding the MDF slots for the booster cover bodies had dried overnight, I was able to start attaching the booster cover bodies to the legs. Two screws per booster cover were all that were needed. I only had enough time to take care of one of the legs in the morning, I did the other in the evening.



I also started drilling holes in the horseshoes to attach the bottom shoulder buttons, and the shoulder hydraulics.



For the shoulder hydraulics, I attached a piece of tape (same width and length as the hydraulic) to the back of the part, and then screwed a screw into each of the two holes in the back, making corresponding holes in the tape. Then I took the tape, centered it properly into the slot in the horseshoes, and used that as a guide for drilling.





Things seemed to turn out okay.



I didn't do the top shoulder buttons yet because those get installed at an angle, and I need to take the time to do that correctly.

*posted by Victor Franco at 11:29 PM* [2 COMMENTS](#)

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FRIDAY, JUNE 23, 2006

## Installed Top Shoulder Buttons

Tonight I was able to install the top shoulder buttons, and finish up the horseshoes (except for painting).

Based on the blueprints, I used some trigonometry to calculate the angle at which the top button hole should be drilled (five degrees). I tilted the drill press table, centered the bit, and drilled through the horseshoe, from the outboard side to the inboard side. I flipped the horseshoe upside down and rotated it 180 degrees, and countersunk the hole on the other side. Then I cut a #8 screw down to size and installed the button.



Next up: More leg work, including the slots in the ankles, a platform in the ankle to support the leg strut, and I still need to finish off the armpits where the under shoulder details go. Sounds like a busy weekend.

*posted by Victor Franco at 10:56 PM* 0 COMMENTS

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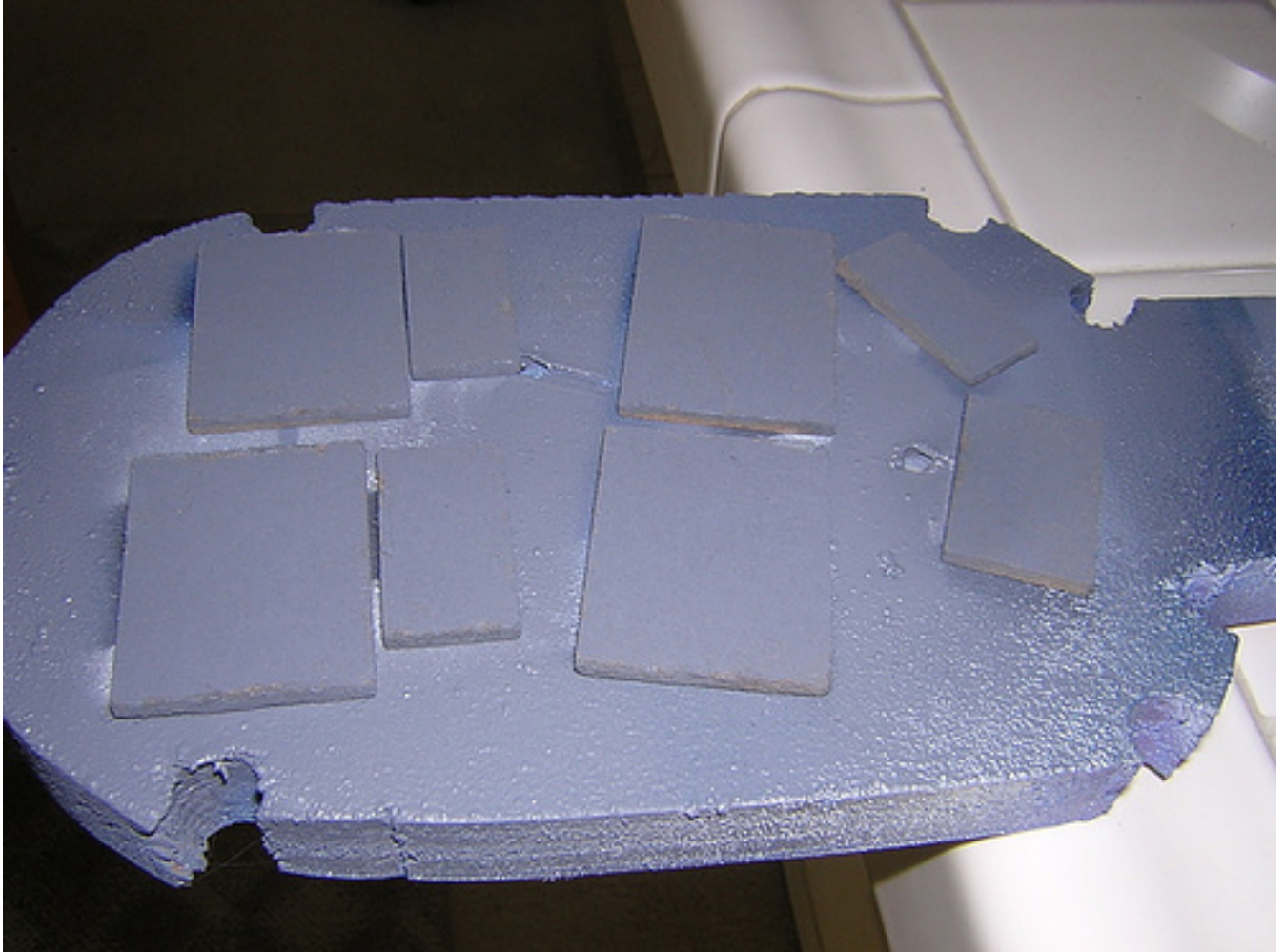
SATURDAY, JUNE 24, 2006

## Odds & Ends

I took care of several miscellaneous leg-related tasks today.

First, I applied primer to the MDF that will go in the armpits, where the under shoulder details go.

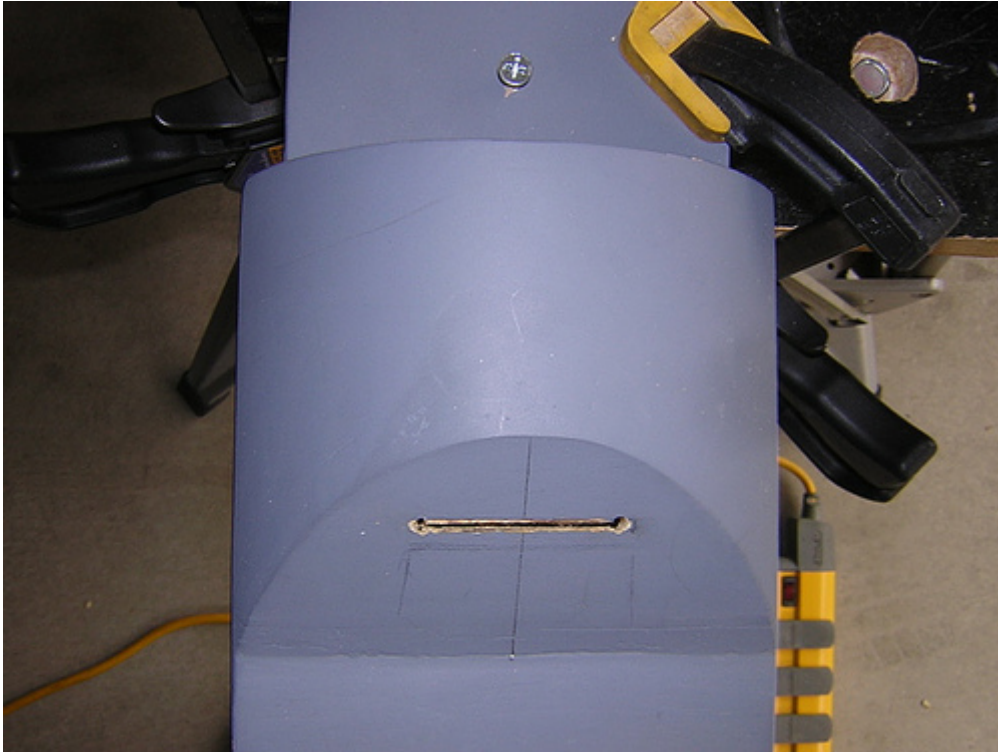




Next, I cut all the nubs off of the resin ankle cylinders, so that they will fit flat onto the ankles.



After that, I took a shot at cutting out the groove in the ankles. I drilled a 1/8" hole in each end of the groove (the blueprints don't specify the height of the groove, only the 1.875" width). Then I used the Dremel with the cutoff wheel attachment to cut the groove.



It turned out pretty ugly looking, but I think with some filing/sanding and wood putty where necessary, it should be okay.

Finally, I made little platforms to support the leg struts from underneath. I used the router table to cut a circle of the proper radius of the inner ankle, and then I chopped a piece of that circle to size to fit in the ankle.

I used a 3/4" diameter Forstner bit to cut a circle about 1/4" deep to support the strut. I will need to glue this platform in place, but I'm waiting until I'm done cleaning up the groove in the ankle before I block my path to the backside of the groove.





*posted by Victor Franco at 11:10 PM* 0 COMMENTS

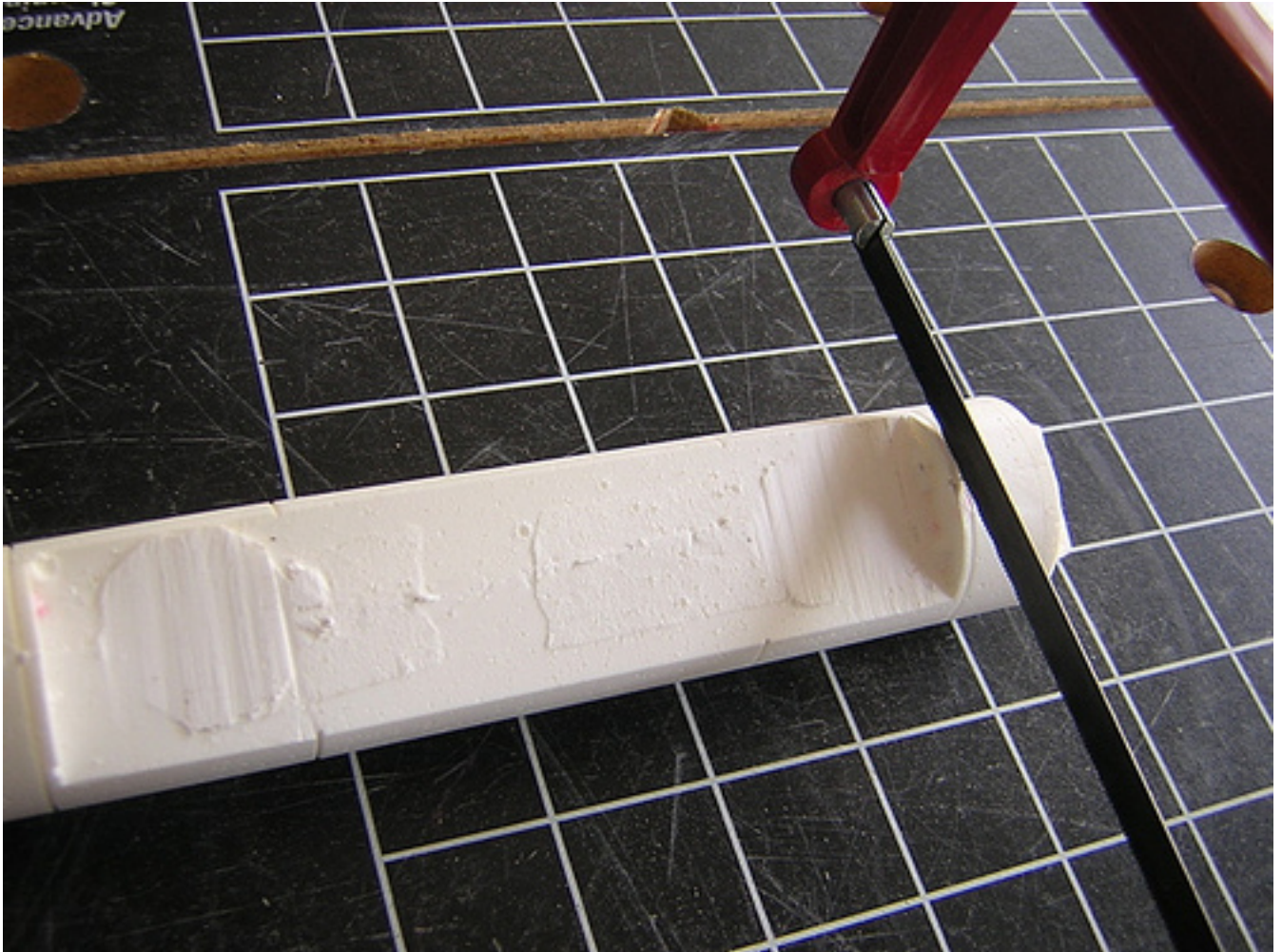
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SUNDAY, JUNE 25, 2006

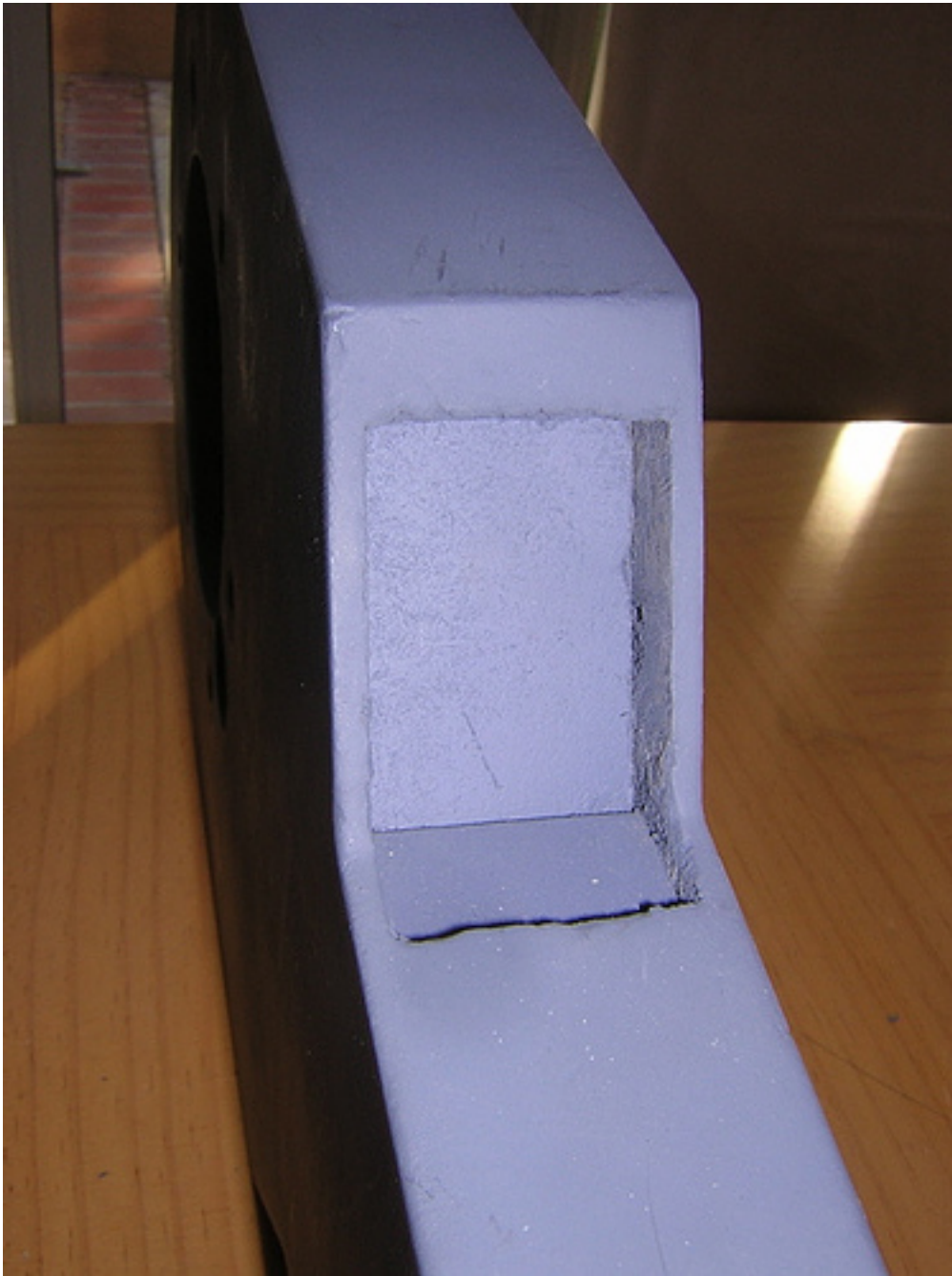
## **Trimmed Ankle Cylinder, Glued Armpit MDF**

I didn't get much done today, considering it's a weekend.

First, I needed to widen the channel in the ankle cylinder to fit on the outside legs. I had already done this to one of the cylinders yesterday, but I forgot to do the other one. (The cylinders for the center leg fit okay without trimming.)



I *finally* glued in my MDF for the armpit area, where the under shoulder details will go. I need to clean up and straighten the edges some more, I'll get to that shortly (I hope).



*posted by Victor Franco at 10:26 PM* 0 COMMENTS

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TUESDAY, JUNE 27, 2006

**Booster Cover Primer, Worked with Alan's Styrene  
Channels, More Armpit Putty**

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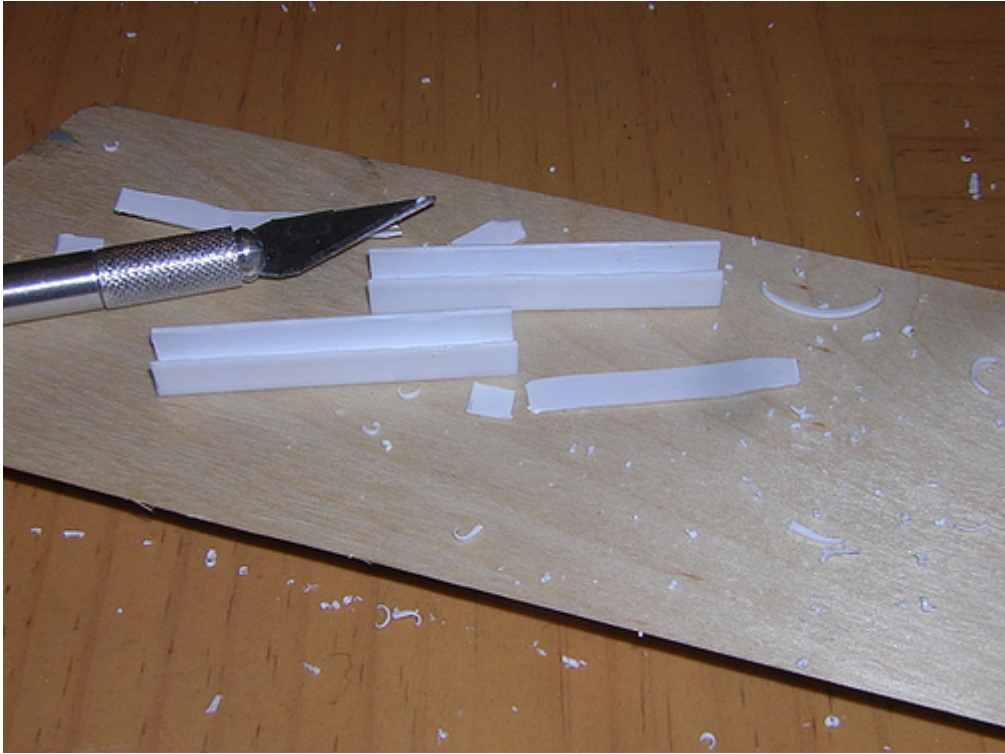


This afternoon I applied three coats of primer to the booster covers. I'll sand them tomorrow and then do it again.



Also, Alan Wolfson very generously sent me some 1/4" square styrene channel (at least, I think it's styrene) to use for the slots in the ankles. Alan also provided helpful instructions on how to use the channel and cut and fill the slots, so I hope to get this done over the next couple of days. Thank you Alan!

I cut one of the edges off each channel to open them up, and then I cut end pieces for the channels, which I glued on with Krazy Glue.





I wrapped up by trying to clean up the edging of the armpits with wood putty.

*posted by Victor Franco at 10:33 PM* 0 COMMENTS

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WEDNESDAY, JUNE 28, 2006

## **Started Painting Booster Covers, Horseshoes**

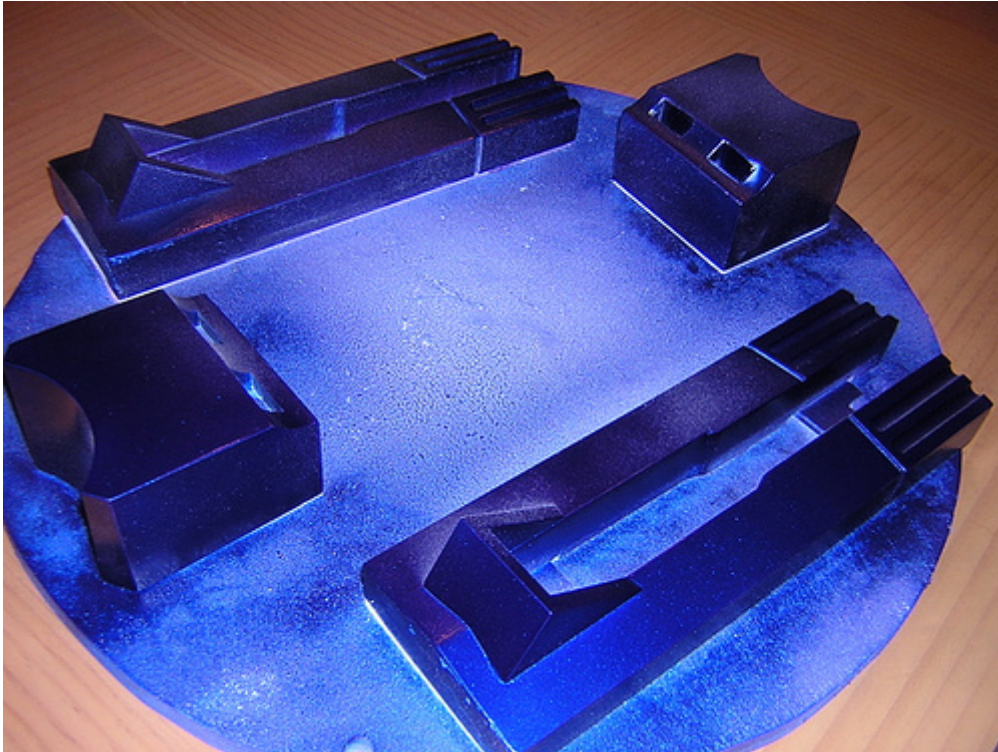
Today I started painting the blue area of the booster covers and the silver area of the horseshoes.

Everything started off okay...





...and then I applied the clearcoat. For whatever reason, I got a frosted effect on much of the paint job.



This may be due to: a) a clogged nozzle, b) old clearcoat, c) it's just garbage, d) all of the above, or e) none of the above. I'm not sure which (just like when I used to take tests for real... when in doubt, go with C).

So I'm probably going to lightly sand with a high-numbered grit to see if I can get rid of the frost. Otherwise, I think I'm looking at repainting yet another piece. Grrr.

The silver part of the horseshoes went somewhat better, they don't get a clearcoat.





Tomorrow I plan to paint the rest of the horseshoes white, while I figure out what to do with the booster covers.

*posted by Victor Franco at 9:38 PM* [3 COMMENTS](#)

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THURSDAY, JUNE 29, 2006

## **Painted Horseshoes & Shims, Routed Ankle Slot, Repaired Booster Cover Paint**

It was a busy and productive day, mostly painting.

This morning I masked the silver part of the horseshoes, and painted the rest of the surface white. I will need to go back with a brush and finish up the holes for the buttons and hydraulics.

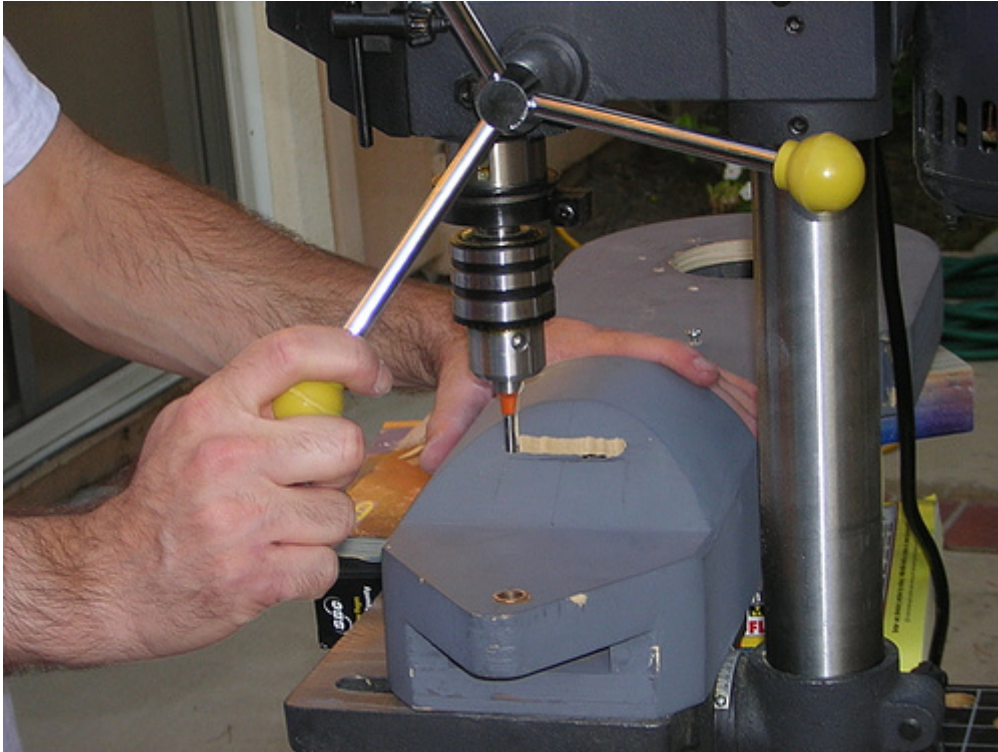




In the afternoon, I trimmed the diagonal portion of the shim layer for each shoulder (they were 1/8" too long), and then I primed and painted the shim layers silver.



Later, I took Alan Wolfson's advice, and attached a 1/4" straight router bit to the drill press, and then did my best to feed the ankle through, to make the slot in the ankle.

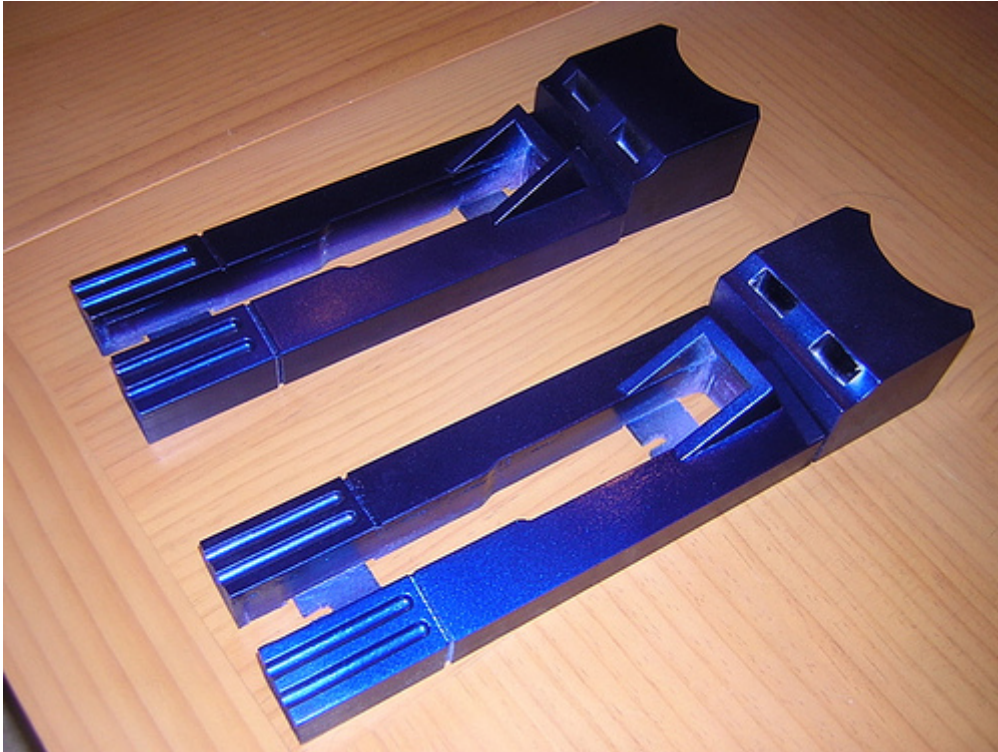


With a little filing here and there, I was able to get my styrene channel to fit. I secured it with silicone. Tomorrow, I plan to fill in the gaps and sand down the portions of styrene that are riding above the ankle, to match the ankle profile.

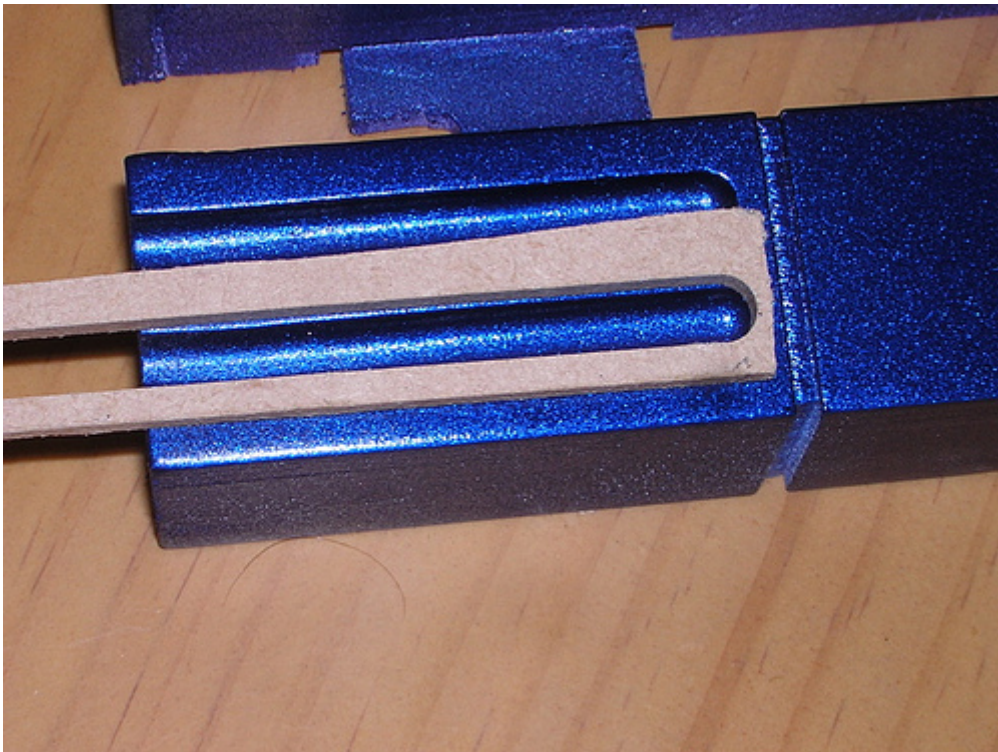




I was able to salvage the paint job on the booster covers, thank goodness. One of the booster covers had severe "frostbite" from yesterday's clearcoat, so I lightly sanded it. I just buffed the other booster cover parts with a barely damp paper towel (I don't have much here at my disposal). Then I recoated with a fresh can of clearcoat, producing much better results.



Finally, I made a little painting mask out of MDF for the slots in bottom of the booster covers, using the same router bit that I used to cut the grooves. This way I can mask out everything but one slot, and paint it silver like it should be.





*posted by Victor Franco at 11:38 PM* 0 COMMENTS

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FRIDAY, JUNE 30, 2006

## Painted Booster Cover Grooves, Messed Up Booster Cover Top Paint, Trimmed Ankle Groove Styrene, Finished Hubs, Primed Resin

Another day of progress and setbacks.

On the progress side, I painted the slots and grooves on the booster cover bodies. My MDF mask didn't work out quite as well as I had hoped, I probably would have been better off using masking tape, or a combination of the two (which I did toward the end).



On the setback front, when I painted the booster cover tops, I kind of messed up the paint job in the slots. So I tried to repair that tonight, and ended up ruining the whole paint job on the booster cover tops. I need to repaint them. I may even repaint the booster cover bodies while I'm at it, I haven't decided. Most of a week's worth of prep down the drain. :(

Back to progress, I trimmed the styrene channel in the slot in each ankle.





Later, I filled gaps with putty and sanded. That turned out okay.

I finished up by using silicone to place the shoulder hub details into the hubs, and applied some primer to resin parts (ankle cylinder wedges, ankle details).

*posted by Victor Franco at 11:36 PM* 0 COMMENTS

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SATURDAY, JULY 01, 2006

## Stripped Paint and Reprimed Booster Cover Tops, Painted Ankle Details & Wedges Blue, Touched Up Horseshoes

The first thing I did today was make a run to Ace Hardware in Corona, to pick up six more cans of Rustoleum Deep Purple Metallic. That should last me a good long while. It was 101 degrees Fahrenheit when I arrived there in the morning.

Later in the day, I stripped the paint off the booster cover tops, since I messed them up yesterday. I just used acetone-soaked paper towels to scrub off the paint.

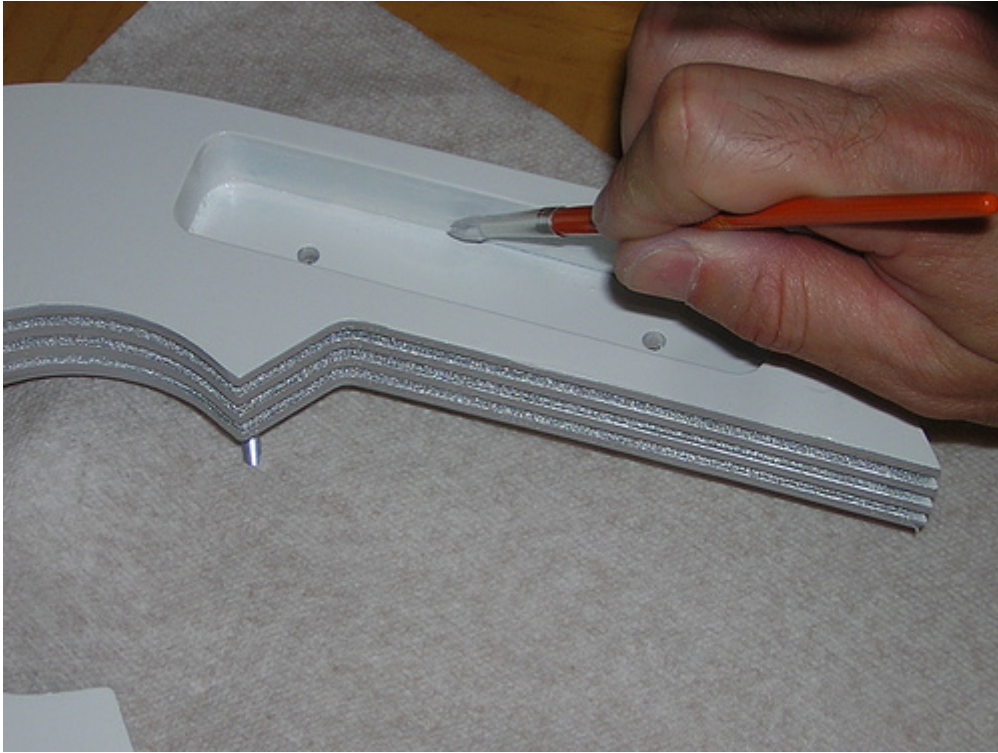


The original primer was left mostly intact, but I later recoated a couple of times, and will sand and reprime again tomorrow.

Next, I painted the blue portions of the ankle details, and the cylinder wedges.



Finally, I touched up the holes where the buttons and hydraulics live in the horseshoes. I didn't get complete coverage with the spray paint, so I sprayed some of the same paint into a pie tin, and used a small paint brush to touch up those areas.



*posted by Victor Franco at 9:27 PM* 0 COMMENTS

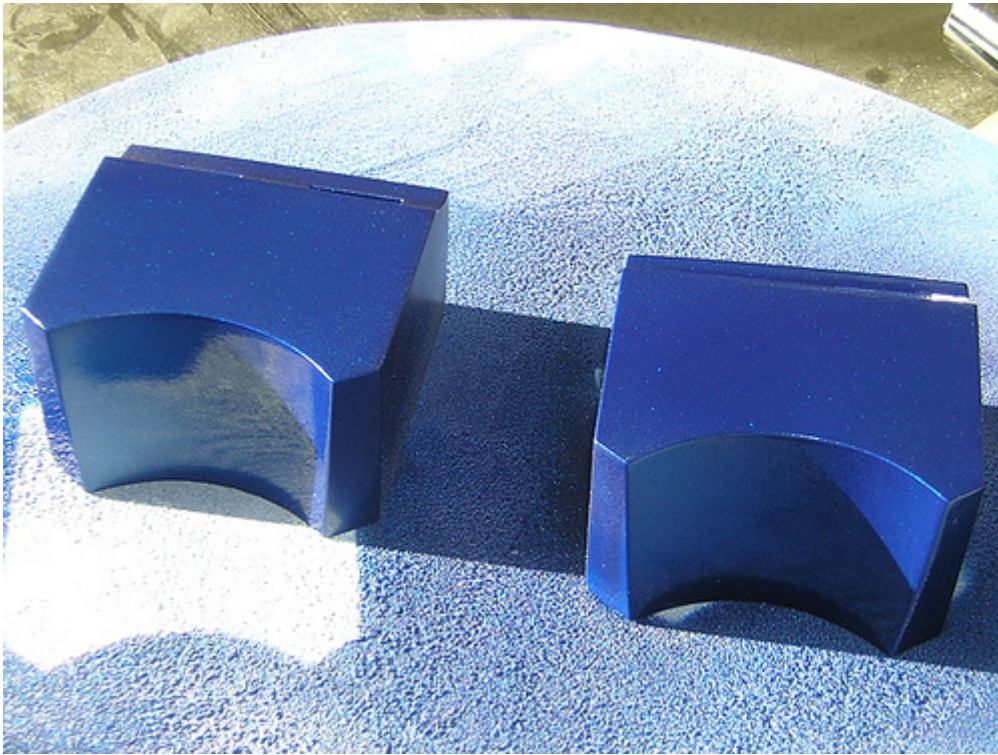
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SUNDAY, JULY 02, 2006

## Repainted Booster Cover Tops

As is becoming somewhat of a tradition with me, I repainted yet another part. This time it was the booster cover tops. Hopefully this is the last time I'll have to do that for a while.





*posted by Victor Franco at 7:32 PM* 2 COMMENTS

## One Year of Building

Today marks my one year anniversary of [my first building activity](#).

I suppose I'm just about where I would expect to be. I figured it would take between one and two years to complete this droid, targeting completion at one and-a-half years (i.e. end of this year).

The number of mistakes I've made is too numerous to count (similar to the dollars spent), but I have to say I have learned a lot along the way. I keep a "lessons learned" document in case I am crazy enough to ever try this again.

Once again, I have to thank folks like Mike Senna, Alan Wolfson, Calvin Thomas and pixelFiend for helping to get me this far along, without their help and encouragement, no droid for Victor. And thanks to my dad and Kelvin Miyake for letting me borrow a boatload of tools, and to Kelvin again for helping with some of the more challenging cuts for me. And let's not forget the R2 Builders Group in general!

Okay, enough with the acceptance speech. I ain't done yet by a long shot. Back to building!

-Victor



*posted by Victor Franco at 8:39 AM* 0 COMMENTS

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MONDAY, JULY 03, 2006

## Under Shoulder Detail Primer

Not much building activity to report today.

The R2 Builders Club hats that I ordered from Tom arrived, they look sharp.

I applied some primer to the under shoulder details, and I plan to paint them silver tomorrow. I also removed the masking tape from the ankle details, and I may paint the rest of those silver tomorrow too, if I think the blue paint has dried enough on them to handle masking tape.

I'm going to take a shot at making my own PSIs based on [Federico Sesler's tutorial](#), so I went to Radio Shack and bought most of the components. Perhaps I can celebrate the Fourth of July by blowing up a board...

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*posted by Victor Franco at 9:59 PM* 2 COMMENTS

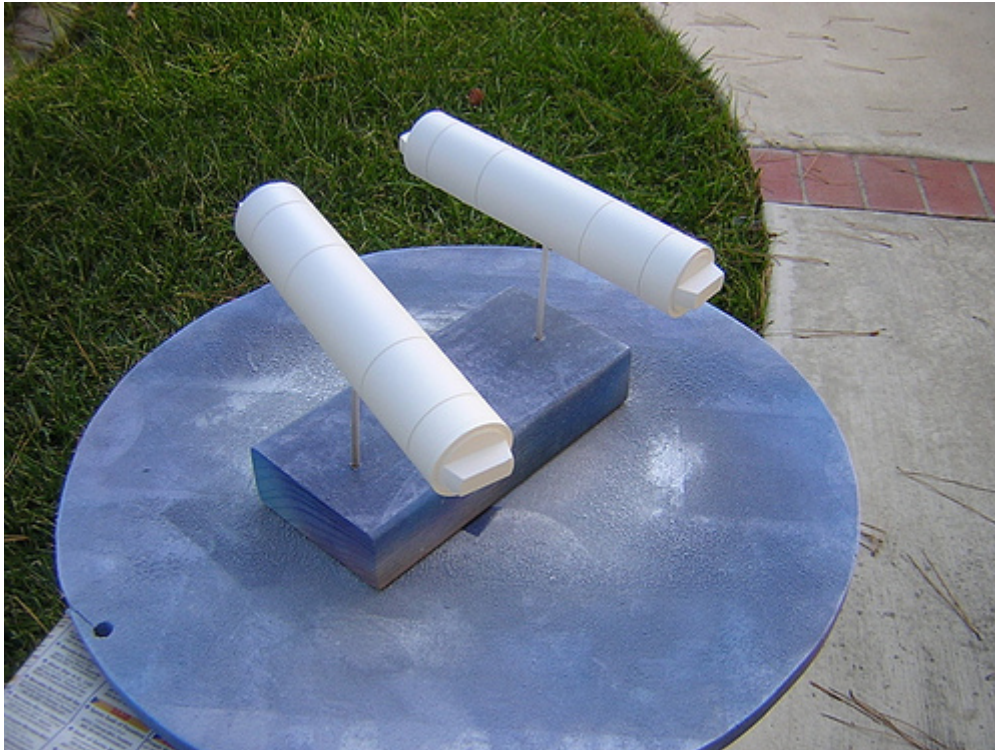
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THURSDAY, JULY 06, 2006

## Ankle Cylinder Primer, Prepped Legs for Painting

Nothing too exciting today.

After taking the day off from building yesterday, I applied primer to the resin ankle cylinders this evening.



I also tried using rubbing compound on one my resin ankle details, where some silver paint ran into the blue, with mixed results. I may repaint that piece.

Finally, in preparation for hopefully painting the legs this weekend, I applied some final touches of wood putty to them.

*posted by Victor Franco at 10:36 PM* 0 COMMENTS

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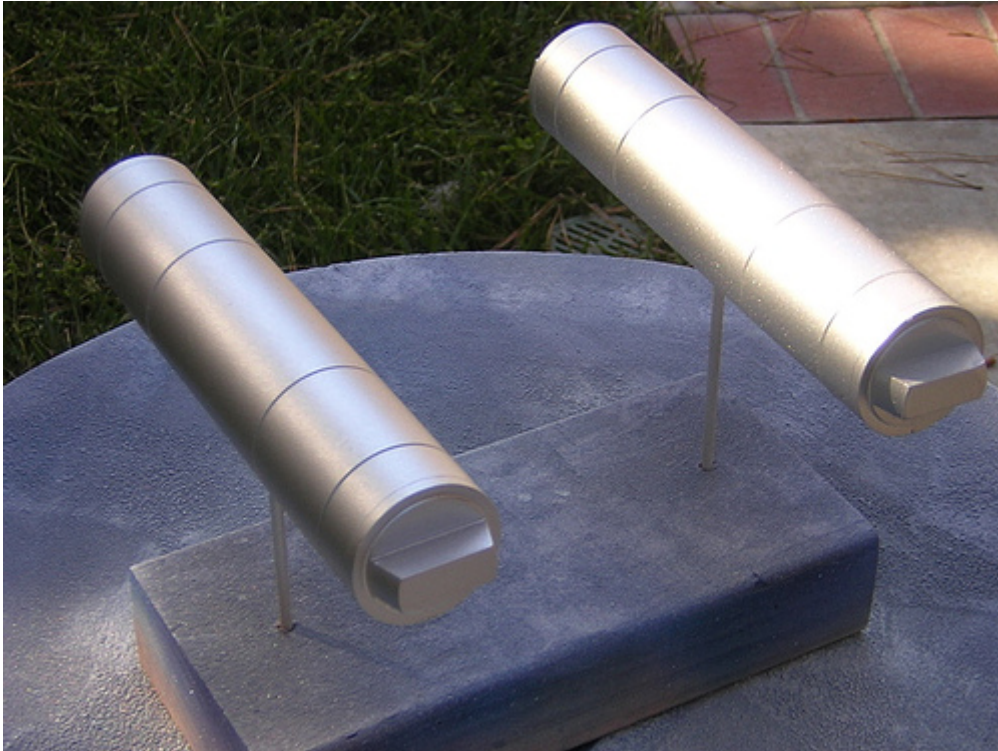
FRIDAY, JULY 07, 2006

## Started Painting Ankle Cylinders, Fitted Dome Bump Switches

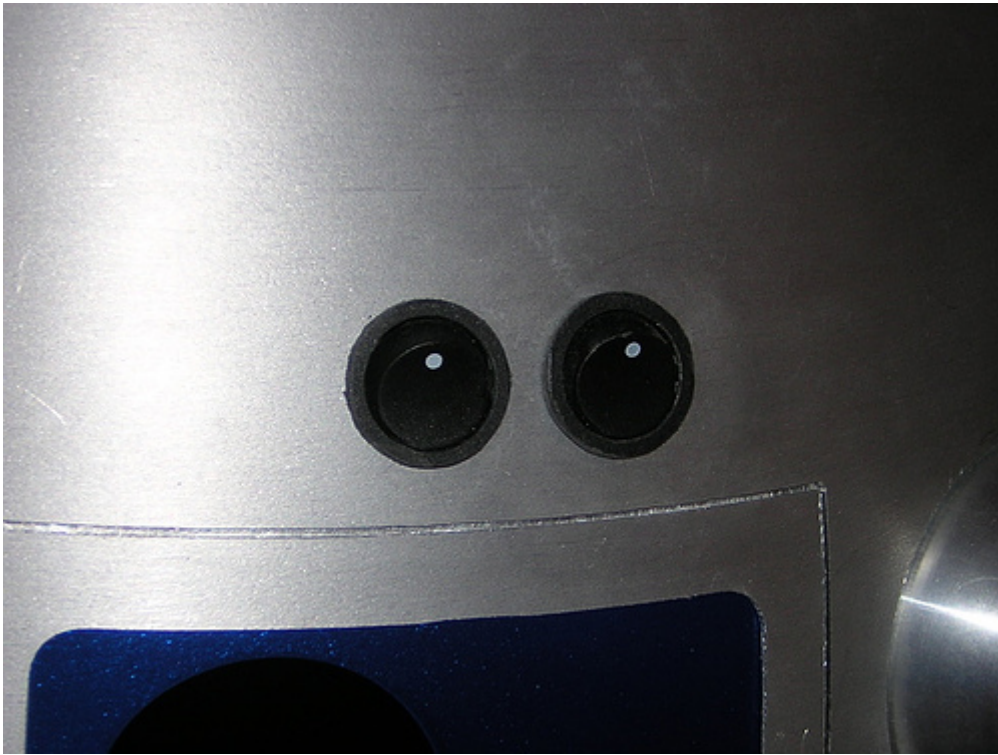
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This evening I painted the outer legs' ankle cylinders.



I also sanded the threads on the dome bump switches to fit inside the corresponding holes in the dome. I am strongly leaning toward painting these blue later.



*posted by Victor Franco at 10:54 PM* 0 COMMENTS

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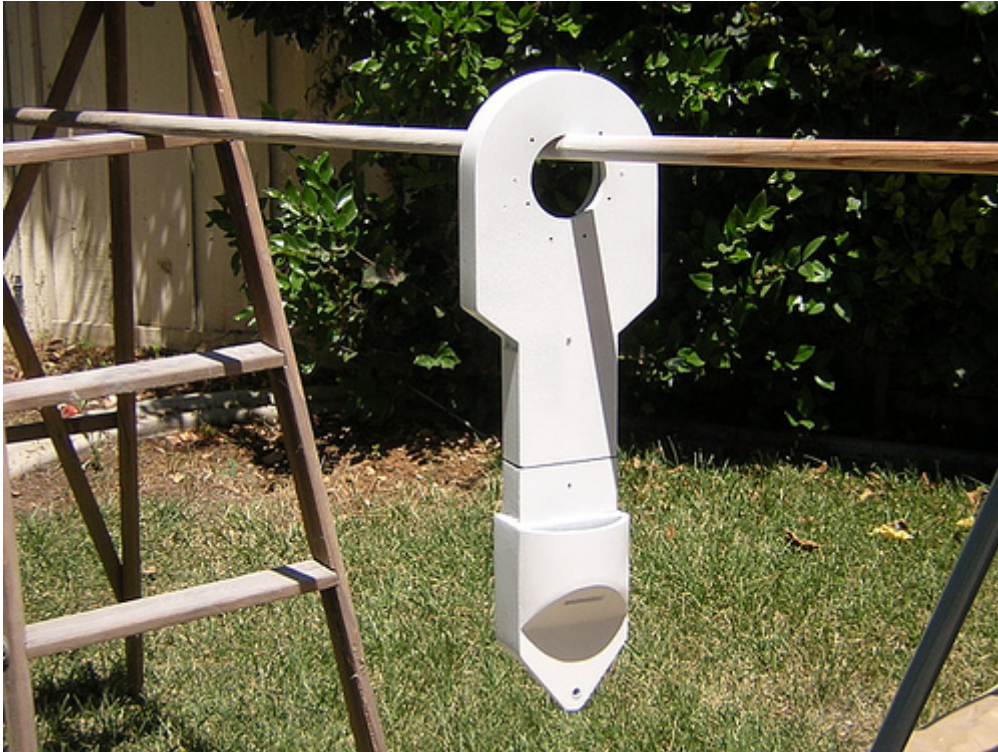
SATURDAY, JULY 08, 2006

## **Tried Painting Right Leg, Received Front Logics, Painted Middle Ankle Cylinders**

More misadventures in painting.

It would seem simple enough, just point spray can at leg and spray, right?





So, how did I manage to do this?

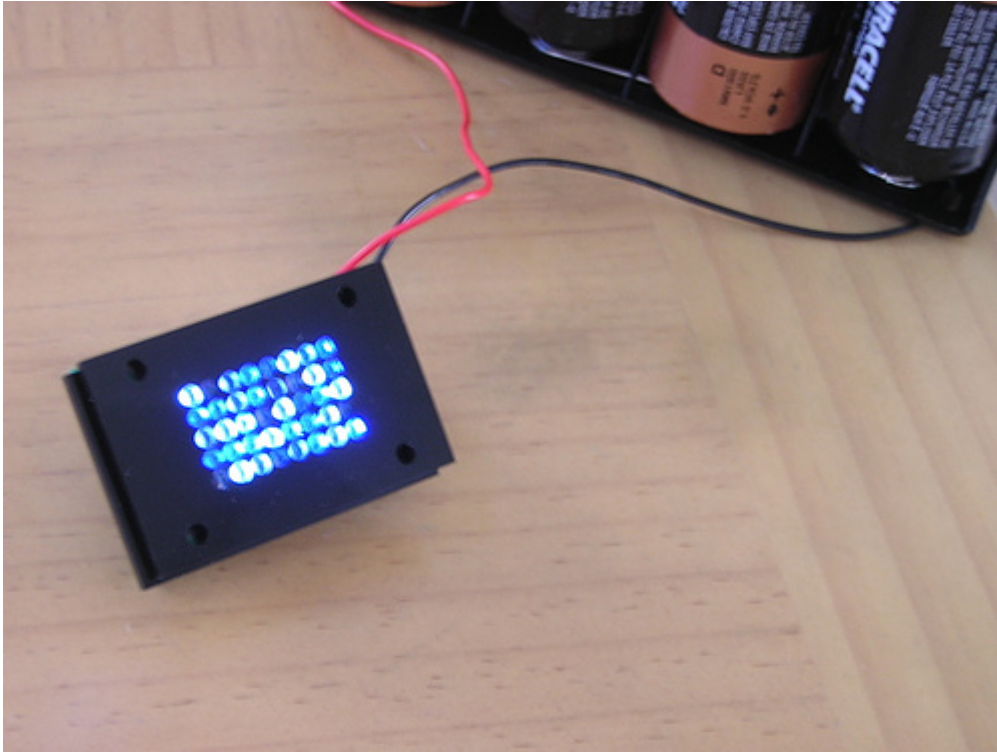


I seem to be self-cursed when it comes to painting. I may or may not try painting the left leg tomorrow. What's the point if it's just going to end up like the right



one? In the meantime, I guess I'm going to have to sand that mess down. Maybe I should go into the texture coating business.

On the good side, my pre-assembled front logic displays from Ben and Jason arrived today, and they work great.



I also painted in the middle leg's ankle cylinders silver today.

*posted by Victor Franco at 9:20 PM* [2 COMMENTS](#)

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SUNDAY, JULY 09, 2006

## **Touched-Up Booster Cover, Ankle Detail Blue Paint**

After consulting with Mike Senna, I'm going to hold off on painting the left leg, and Mike and I will get together next weekend to try to get the paint on the legs right.

All I got done today was some touch-up work on the blue paint on one of the booster covers, and ankle details. I used the pie tin again as a palette, first applying primer, then purple, then blue. The areas touched up were so small I didn't feel the need for clearcoat.

*posted by Victor Franco at 10:07 PM* [0 COMMENTS](#)

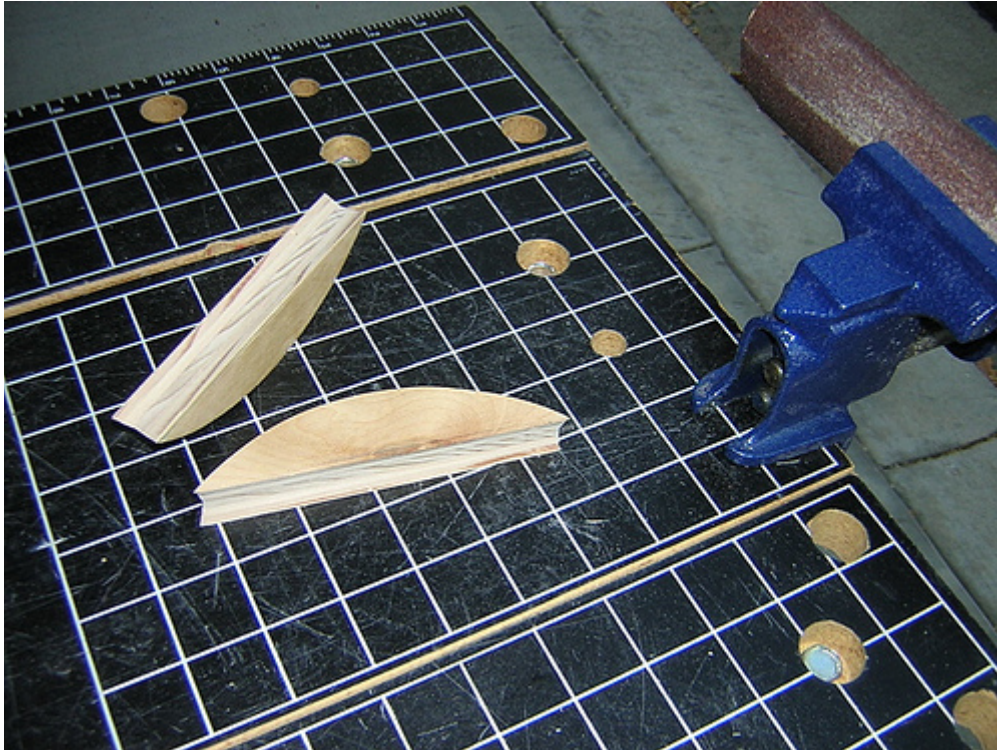
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MONDAY, JULY 10, 2006

## Sanded Ankle Cylinders Holders

The fun never stops here.

All I did tonight was work on the curve at the top of the holders that the ankle cylinders sit in. I wrapped some 60 grit sandpaper around some spare 1" pipe that connects the legs together, and sanded for a while. Care must be taken during sanding, or else a warped curve results.



I'm not sure if I'm done yet. The holder hangs over the edges of the leg by a small amount (less than 1/8" on each side). Depending on how lazy I am, I may or may not sand these down some more.

I'm glad these are optional on the middle leg.

*posted by Victor Franco at 8:32 PM* [0 COMMENTS](#)

WEDNESDAY, JULY 12, 2006

## Finished Painting Ankle Cylinders, More Cylinder Holder Sanding

This afternoon I applied the blue paint to the middle section of the ankle cylinders. It was the usual process -- mask off everything but the middle section,

then apply purple, blue and clearcoat. I was able to do all four cylinders. Hopefully when the tape comes off it will all look correct.



I also put in a little more time sanding the ankle cylinder holders, they should be just about done.

The [PVC sheets I ordered yesterday from McMaster-Carr](#) for the ankle bracelets arrived today too. I ordered two 12"x24"x1/8" sheets.

*posted by Victor Franco at 9:33 PM* 0 COMMENTS

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THURSDAY, JULY 13, 2006

## Unmasked Ankle Cylinders, Prepped Cylinder Holders for Painting

Yeehaw, I painted something right on the first try! The ankle cylinders appear to have turned out okay.





I also prepped the ankle cylinder holders for primer/painting by drilling a hole on the holder side, so they can sit upside-down on top of the same rods that the cylinders were mounted on. Hopefully I'll start the process tomorrow.

*posted by Victor Franco at 9:09 PM* [2 COMMENTS](#)

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FRIDAY, JULY 14, 2006

## Started Cylinder Holder Primer

I started spraying primer on the ankle cylinder holders. I did not use wood filler on these first, and I may end up regretting that. I sanded the primer in the evening, and will apply some more tomorrow. If that does not hide the grain sufficiently, I may have to sand down to the wood and apply putty.



Hmm, I need to start taking better care of my yard.

*posted by Victor Franco at 10:05 PM* 0 COMMENTS

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SATURDAY, JULY 15, 2006

## Started Ankle Brackets

I started working on the ankle brackets today.

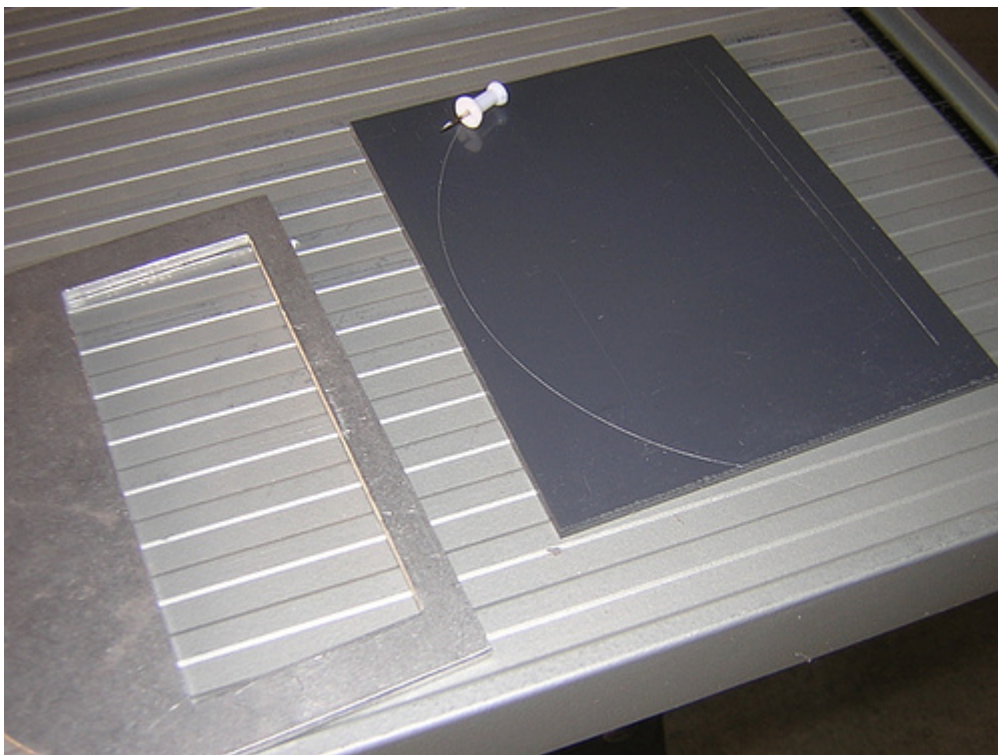
I'm making these out of PVC, once again following Mike's example. I'm also going to deviate slightly from the blueprints. Where the blueprints have the booster covers sitting completely on top of the ankle bracket, I am going to have them go *through* the ankle bracket, by cutting a hole in the bracket where the booster will fit.

I started off by cutting a 12"x24"x1/8" sheet of gray PVC roughly to size. First I cut the length, then the width.





Next, I traced the outline of the bracket shape onto the PVC, using a pin and an aluminum bracket that I'm not going to end up using on this droid.

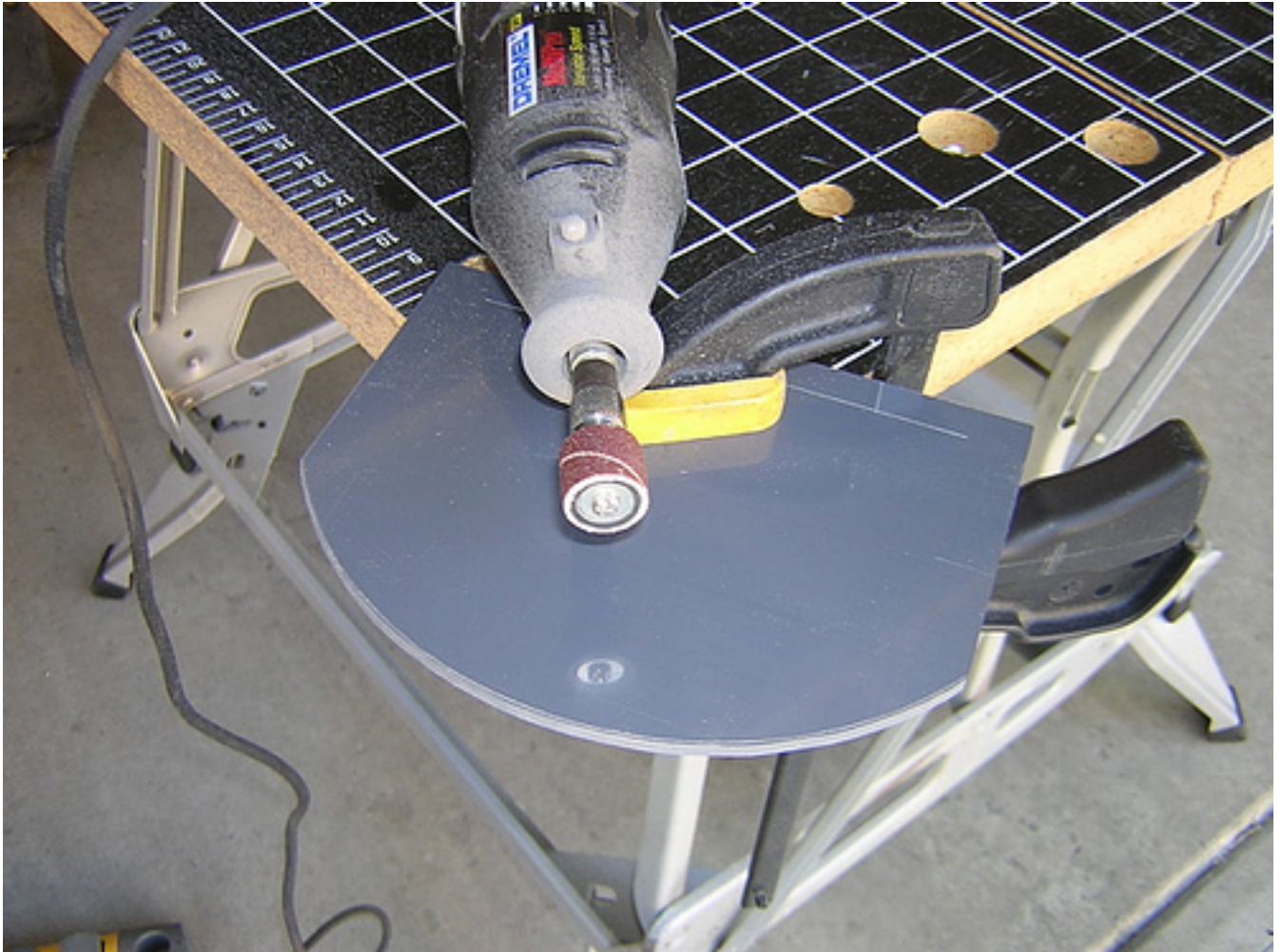




After that, I rough-cut the curve using the Dremel cut-off wheel attachment. This was like a knife through butter, but don't breath the fumes!



I cleaned up the curve with the Dremel drum sander attachment.



I also spent a little more time working on the cylinder holders (more primer) and tried sanding the unpainted coin slots to get them to fit through my skins. They still don't fit, I may have to try cutting the one row of six slots into two pairs of three. Or even just cut them each out individually. We'll see.

*posted by Victor Franco at 9:31 PM* 0 COMMENTS

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SUNDAY, JULY 16, 2006

## Leg Rehabilitation Begins at Mike's

*"You can repair him, can't you? You must repair him!"*

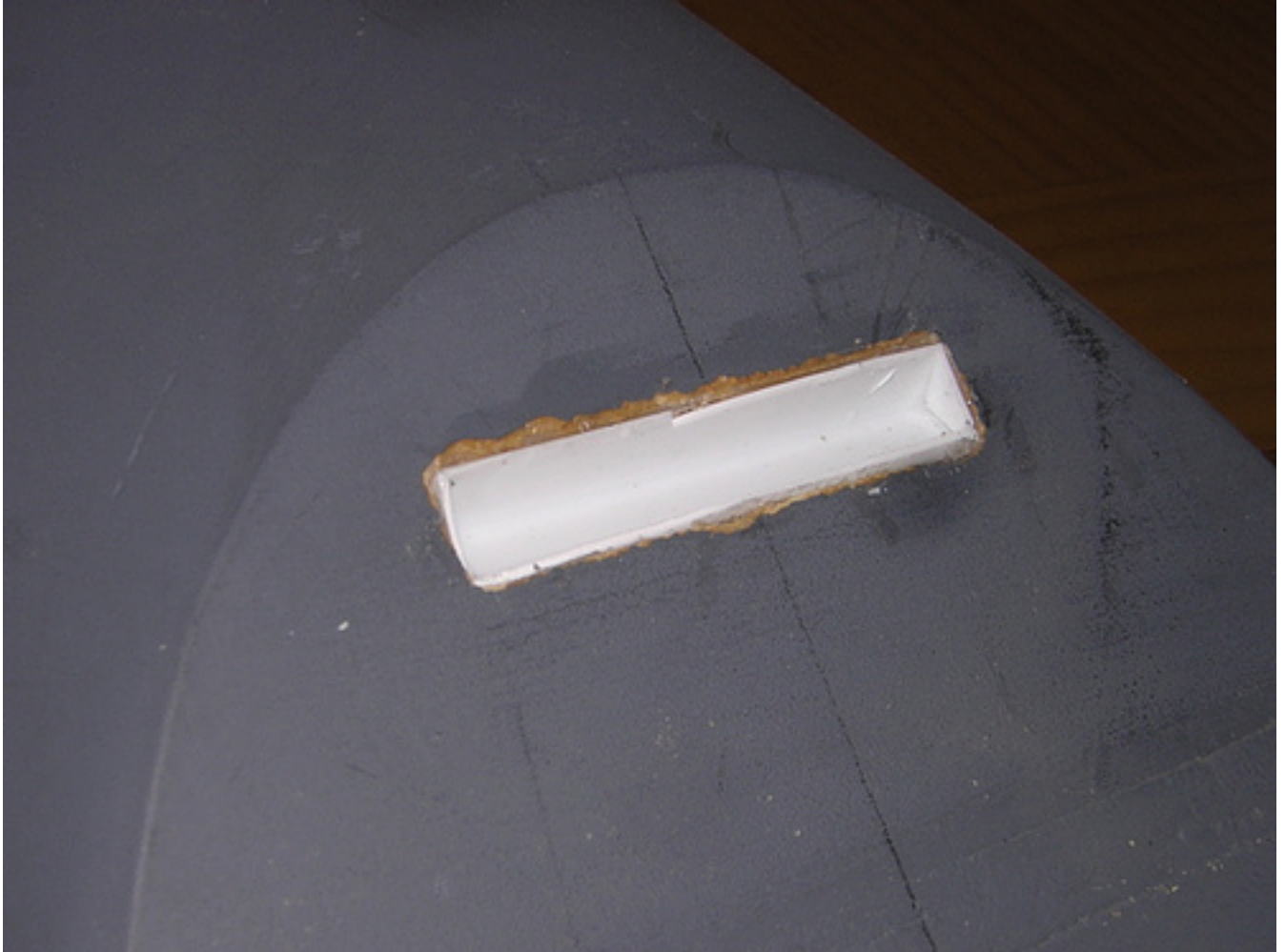
I've danced around some problems with the legs for a long time, and it was time to face my demons.

First off, the armpits for the under shoulder details are hideous on my legs. So hideous that I rarely post pictures of them. Second, I did a poor job in

implementing Alan's well suggested and well explained styrene channel for the slots in the ankles. So, in all embarrassment for my inability to execute, here's the ugly truth.







Mike Senna kindly offered to help me do some repairs. Starting with sandpaper and Bondo, we started smoothing and filling gaps in the armpits and slots. Keep in mind that I've never purchased Bondo before today, let alone used it. I've heard of it ("that car's body is over half Bondo"), but that's about it. Bondo is my new friend now.



We used paper plates (you read correctly) cut to the proper size and shape to smooth out the edging on the armpits and legs, with Bondo between the paper plate snippets and the wood. Paper is wood, right? It can be glued, primed, painted, etc.



When we were done, the areas we worked on looked much, much better.







Sure, there's a little work left to be done, but this was a big boost.

I also still need to sand down the leg I painted white last weekend, I'll work on that during the week. Hopefully next weekend the legs will be ready for another try at a final painting. Stay tuned...

*posted by Victor Franco at 10:15 PM* [0 COMMENTS](#)

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MONDAY, JULY 17, 2006

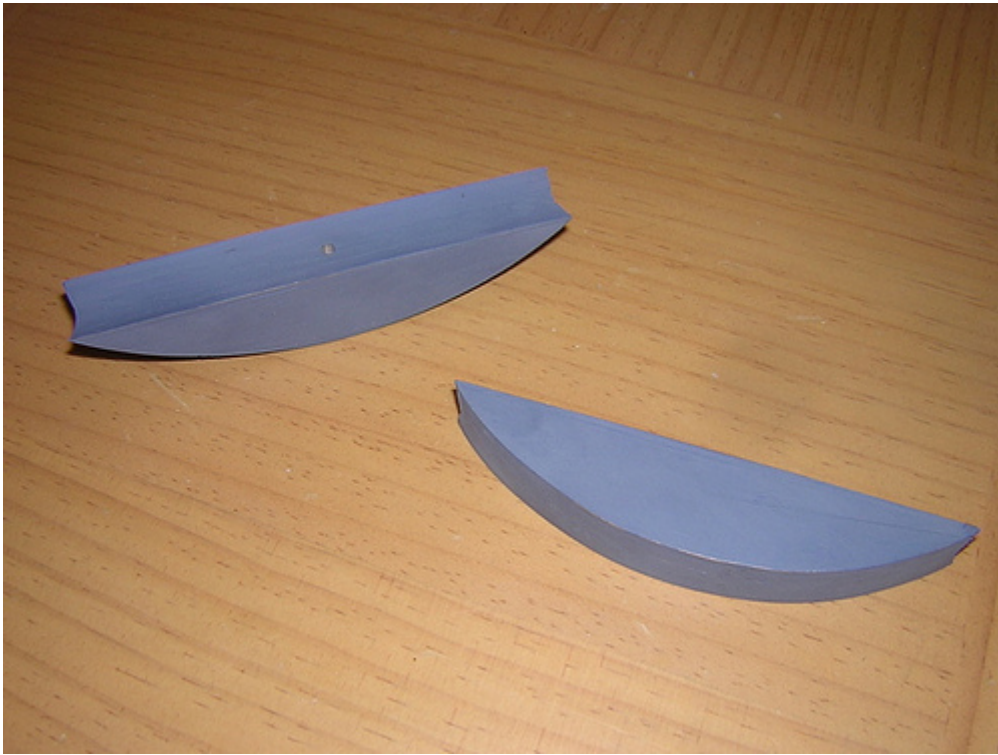
## Leg Rehab Day 2, Sanded Cylinder Holders

More work on the legs, and this will probably continue throughout the week.

There is a slight curve along the edges of the legs, so I used some sandpaper wrapped around a flat piece of scrap wood to sand the edges flat. I'm not done yet, but I made decent progress. I also worked on another pocket for the under shoulder details. I used Bondo again to affix paper plate cutouts to the top and bottom edges, and filled gaps with Bondo. I'll sand the mess down soon.



Speaking of sanding, I sanded the primer on the ankle cylinder holders. They are pretty smooth, but I need to fill in a thin line that I accidentally made when I was sanding against the pipe in the vise.



*posted by Victor Franco at 10:28 PM* 0 COMMENTS

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WEDNESDAY, JULY 19, 2006

## Leg Rehab, Day 4

I did some more work on the legs this evening. I sanded the top edge of the right (painted) shoulder, in an effort to get it smoother. I also sanded down the Bondo from yesterday's under shoulder detail pocket repair.

Later, I finished placing the paper plate cutouts and Bondo into the final pocket slot (it looks just like yesterday's entry). I'll sand that down tomorrow.

I also applied Bondo to the ankle slot on the right leg. I'll sand that down tomorrow too. I may need to make one more pass with the Bondo, we'll see how it looks first.





I'm trying to finish up the repairs by Friday night, so I can go back to Mike's for final painting Saturday.

*posted by Victor Franco at 10:59 PM* [0 COMMENTS](#)

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THURSDAY, JULY 20, 2006

## Leg Rehab, Day 5

More of the same (I realize this is getting boring, it's no party here either).

I cleaned up a bit of the work I did yesterday. I hit the white leg's ankle slot with a spot of primer to get an idea of how it was turning out.



Then I continued sanding, Bondo, lather, rinse, repeat. One more day of this (I hope).

*posted by Victor Franco at 11:01 PM* 0 COMMENTS

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FRIDAY, JULY 21, 2006

## Leg Rehab, Day 6

One final day (I hope) of finishing the legs before trying to paint again. Just a little light touch-up and sanding on the legs, and I think they are good to go. I'm keeping my fingers crossed.

*posted by Victor Franco at 11:58 PM* 0 COMMENTS

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SATURDAY, JULY 22, 2006

## Legs Painted(!), Aluminum Flashing for Shoulder Discs

Whoo hoo! I went over to Mike's today, and at long last, the legs got painted.

Mike did all the painting, and I was more than grateful. As Principal Skinner said on *The Simpsons*, "If life has taught me one lesson repeatedly, it's to know when I'm beat."

Mike applied his expert painting skills to the middle leg first.



Next, it was on to the outer legs. Nothing like wearing a mask in 100+ degree heat, with leg-on-a-stick.



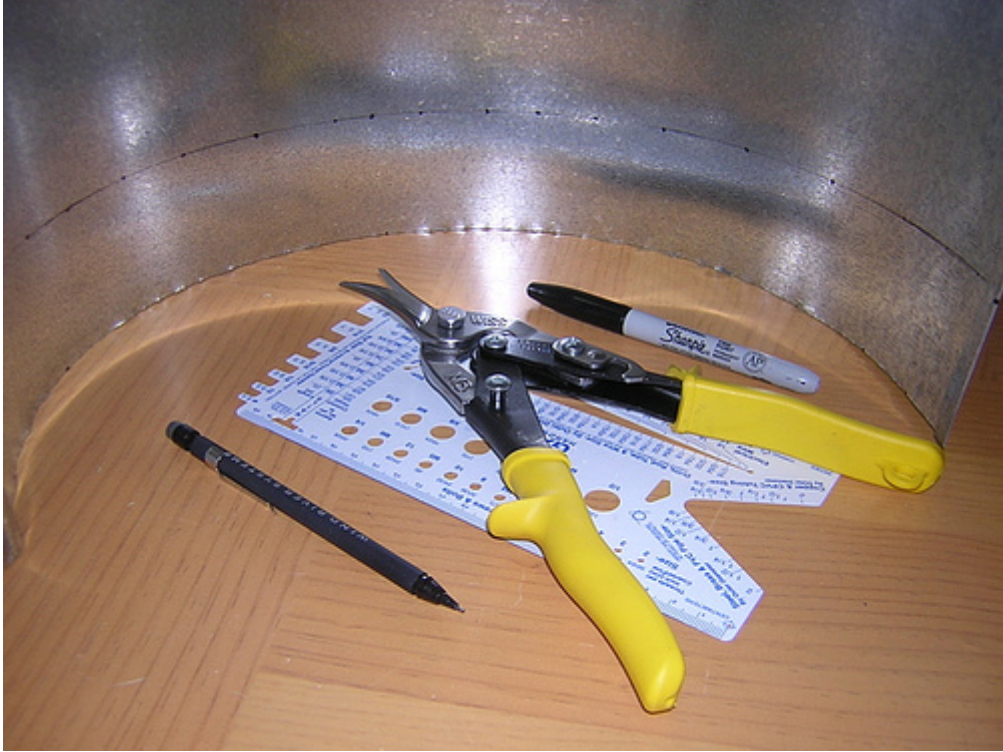


Then, it was time to hang 'em up to dry.



Hopefully they'll be ready to use in about a week (we want them to dry thoroughly). Thank you Mike!!!

I picked up some aluminum ducting (3' length x 8" diameter) at Home Depot on the way home, and used tin snips to cut the pieces that cover the wooden shoulder discs. I have not screwed these into the shoulder discs yet, I want to wait for the legs to come back home first so that I can ensure a proper placement.







I wrapped up by fitting the coin slots into the frame, I plan to paint them silver tomorrow (assuming we don't get thunderstorms in all this humidity, and that I have enough silver paint on hand).

*posted by Victor Franco at 11:13 PM* [0 COMMENTS](#)

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MONDAY, JULY 24, 2006

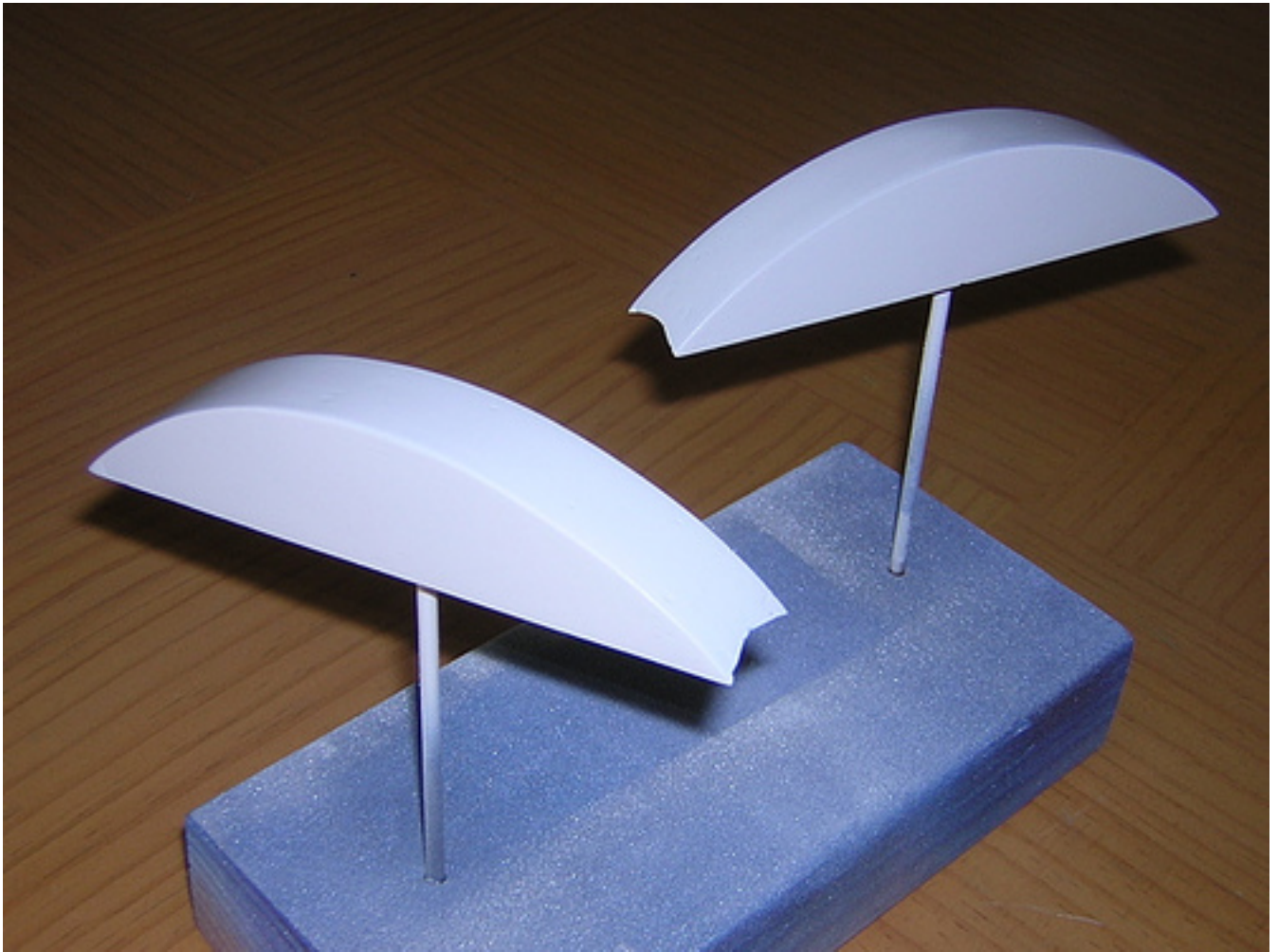
## Painted Coin Slots, Cylinder Holders

Sure enough, we did have thunderstorms yesterday, so I decided to take the day off. Today things were somewhat dryer, although still relatively humid. Not exactly ideal conditions for painting, but why let good judgment stop me now?

In the morning, I painted the resin coin slots silver. When I got home in the evening, they were dry, so I gave them a loose fitting in the skins.



Later on, I painted the wooden cylinder holders white. No apparent disasters that I can see.



*posted by Victor Franco at 7:22 PM* 3 COMMENTS

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TUESDAY, JULY 25, 2006

## **Bondo for Ankle Cylinders**

Hey, remember those ankle cylinders whose paint job I got right the first time? Well, it was time to destroy the paint job.

There were little pinholes in the some areas of the resin that I just ignored, but I've decided to go back and fill them with Bondo. That means I'll have to sand and repaint, at least the silver section for each of them, and the blue section for one of them. Oh well...





*posted by Victor Franco at 10:46 PM* 0 COMMENTS

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WEDNESDAY, JULY 26, 2006

## **Sanded & Started Repainting Cylinders**

This morning I sanded down the Bondo that I had applied to the cylinders last night. In the evening, I applied masking tape to the blue areas in the center, and repainted the first two cylinders' silver areas.



I'm getting a lot of mileage out of that block of wood with the two 1/8" metal rods in them.

*posted by Victor Franco at 8:55 PM* 0 COMMENTS

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THURSDAY, JULY 27, 2006

## Finished Repainting Cylinders Silver, Power Couplers Arrive

This morning I repainted the silver areas of the remaining two ankle cylinders.

In the evening, Michael McMaster's excellent power couplers were awaiting me in today's mail.



Mike Senna called to say the painted legs were pretty much dry, so I'll pick those up Saturday morning. I can't wait to get this droid back on three legs.

*posted by Victor Franco at 9:39 PM* [4 COMMENTS](#)

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FRIDAY, JULY 28, 2006

## **Pat's Shoulder Hubs Arrive**

Pat Coajou's shoulder hubs arrived today (it's raining aluminum lately). They do look terrific, but I got impatient and ordered Jason's a while back. Still, I'll be holding onto these.





Does this count as building? (No.)

*posted by Victor Franco at 6:00 PM* 0 COMMENTS

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SATURDAY, JULY 29, 2006

### **Back on Three Legs, Secured Aluminum Flashing**

I was able to pick up the painted legs from Mike's today. I took them home, and couldn't wait to secure the aluminum flashing that goes around the shoulder discs, and fit all the decorations on.



My R2-building schedule will be a bit sporadic for the next few days (family is in town), so I can only hope to get work done on R2 in the near term.

*posted by Victor Franco at 11:01 PM* 0 COMMENTS

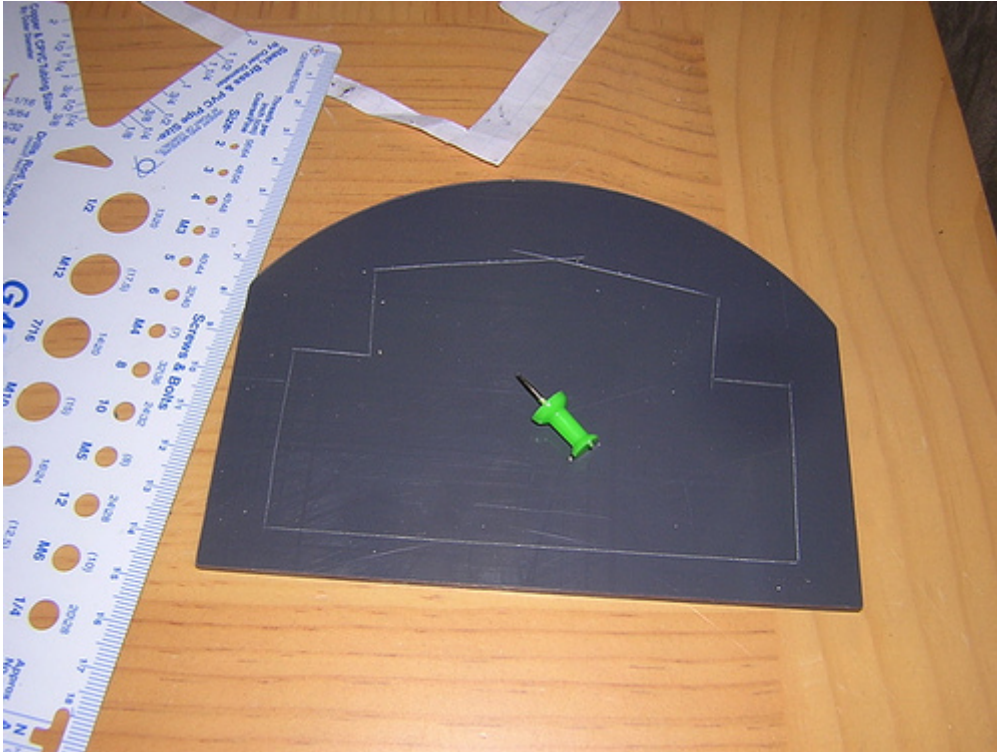
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SUNDAY, JULY 30, 2006

## Resumed Work on Ankle Brackets

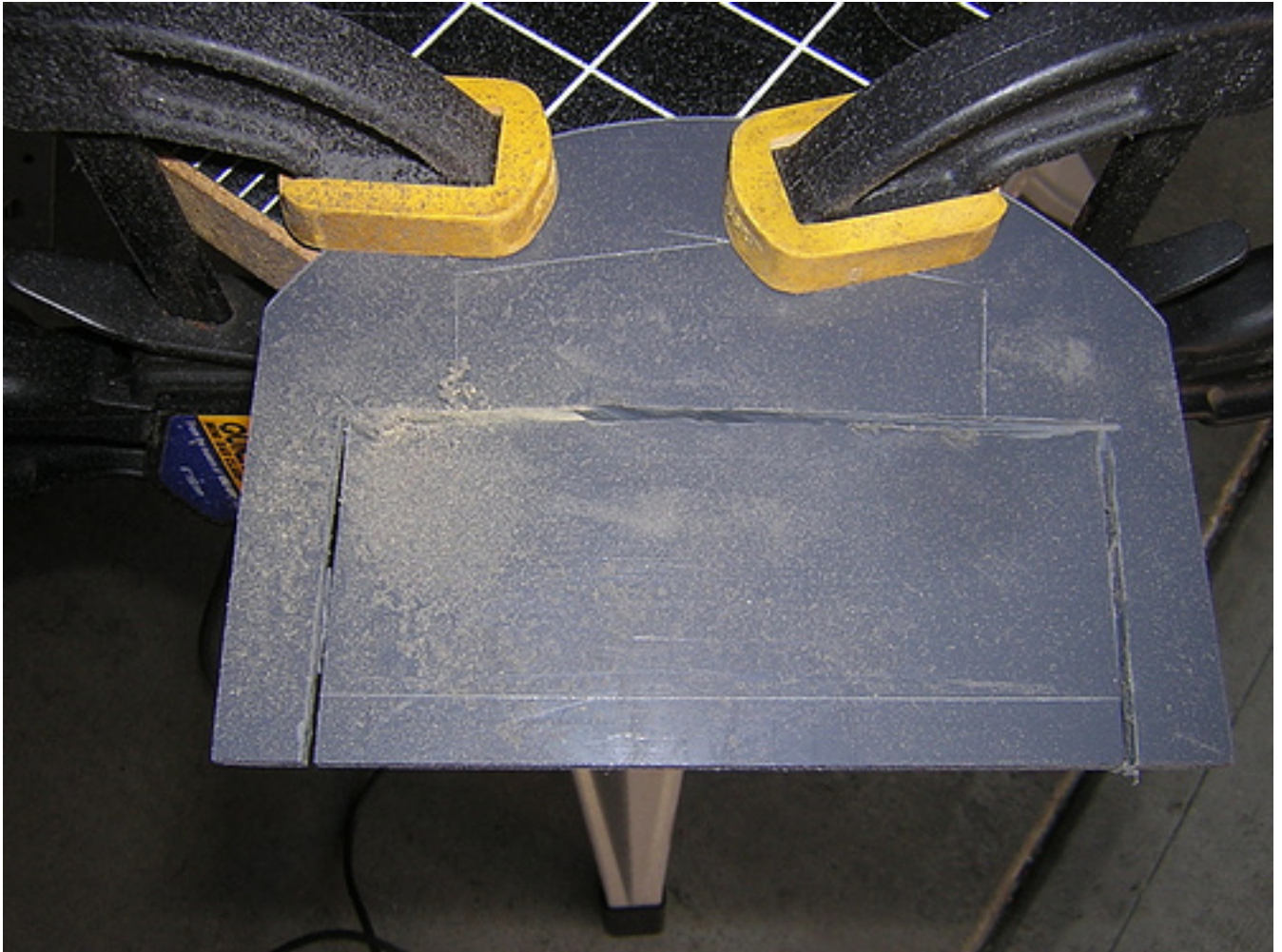
This afternoon I was able to spend a little time returning to work on the PVC ankle brackets (one of them, at least).

First, I used a push pin to score the outline that I need to cut to allow the leg and booster cover to pass through.

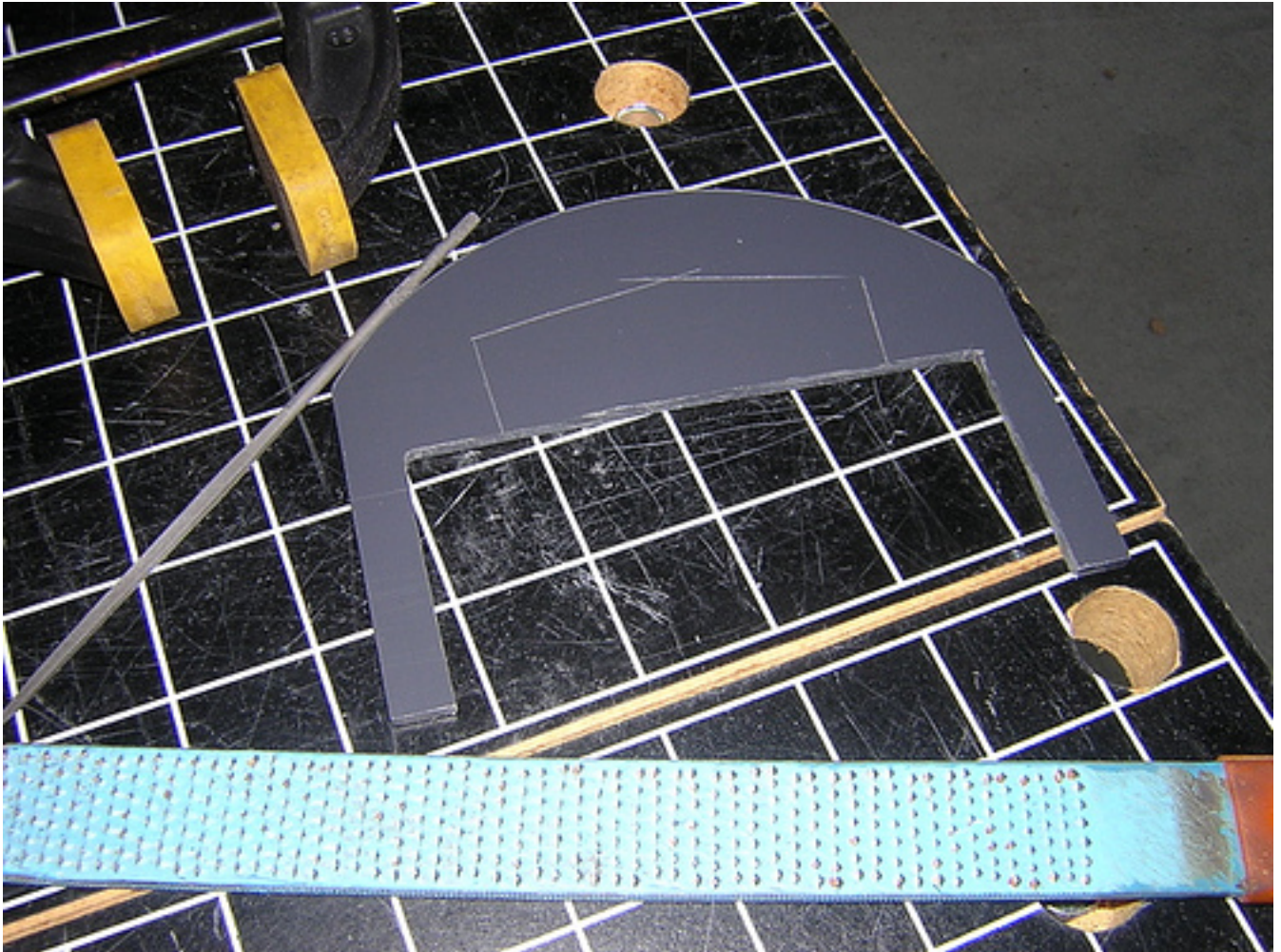


Next, I used the Dremel with the cutoff wheel attachment to rough-cut the section goes around the leg. (I'll cut the area for the booster cover later, when I have more time.)



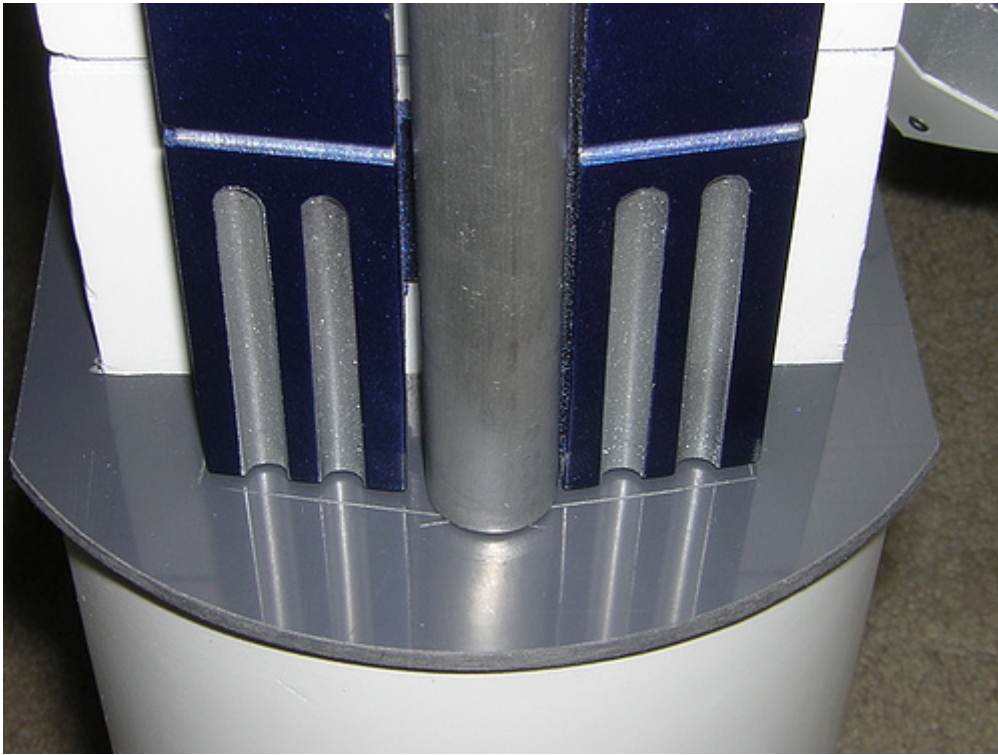


I used a course file and a fine file to clean up the edges as much as possible.



A test fit indicates things are close, but I may need to go back and file off a little more material, the bracket is not sitting quite far back enough. It's pretty close, though.





*posted by Victor Franco at 10:56 PM* 0 COMMENTS

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TUESDAY, AUGUST 01, 2006

## **Finished Right Ankle Bracket Cuts**

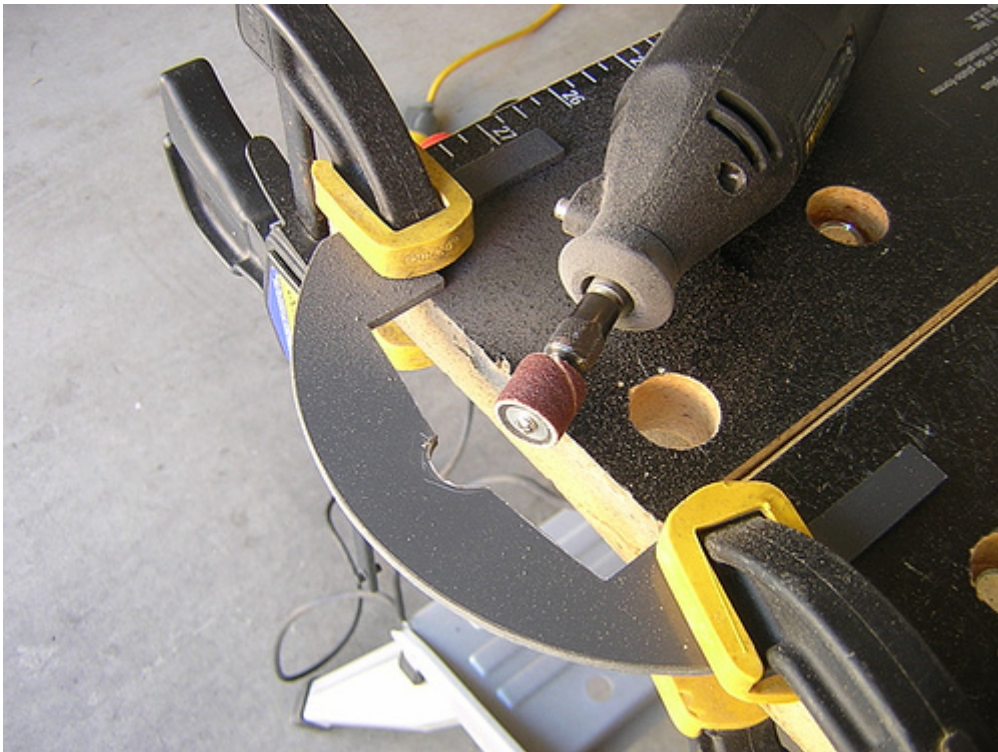
After taking the nephews to Disneyland yesterday (and picking up a small R2 figurine at the Star Tours gift shop), I was able to do a little bit of building today.

I picked up where I left off on the right ankle bracket, using the Dremel cutoff wheel attachment to cut the area out where the booster cover will go.

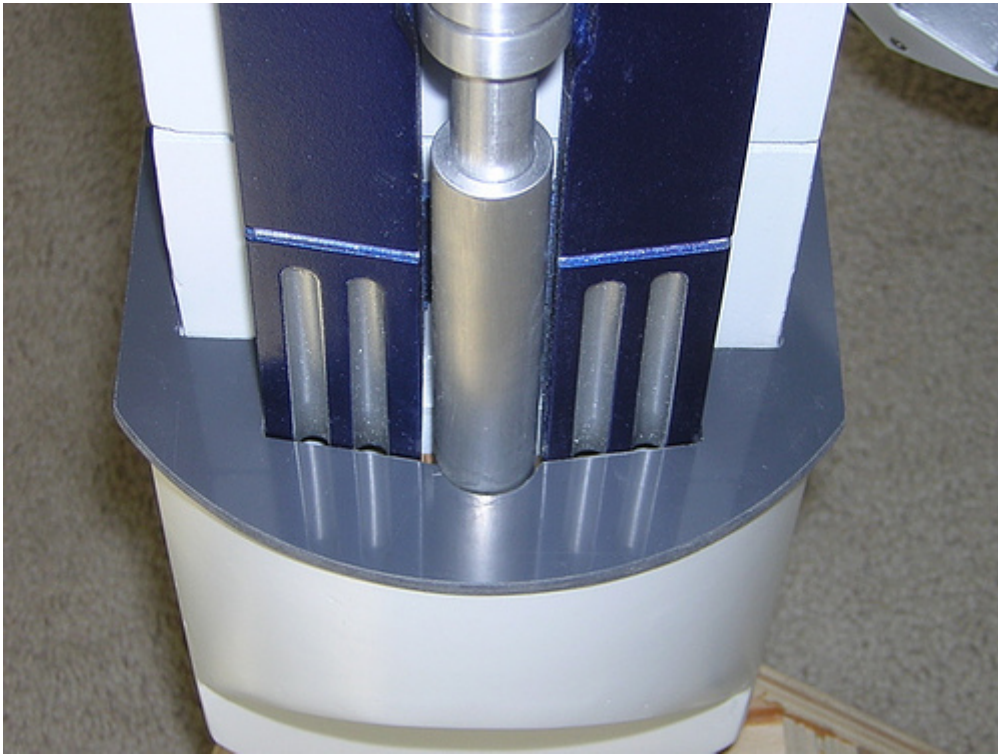




I used the Dremel drum sander to round out the area where the leg strut shaft will go.



The test fit looks good.



I will need to cut and glue in a piece of PVC to go around the back of the leg later on.

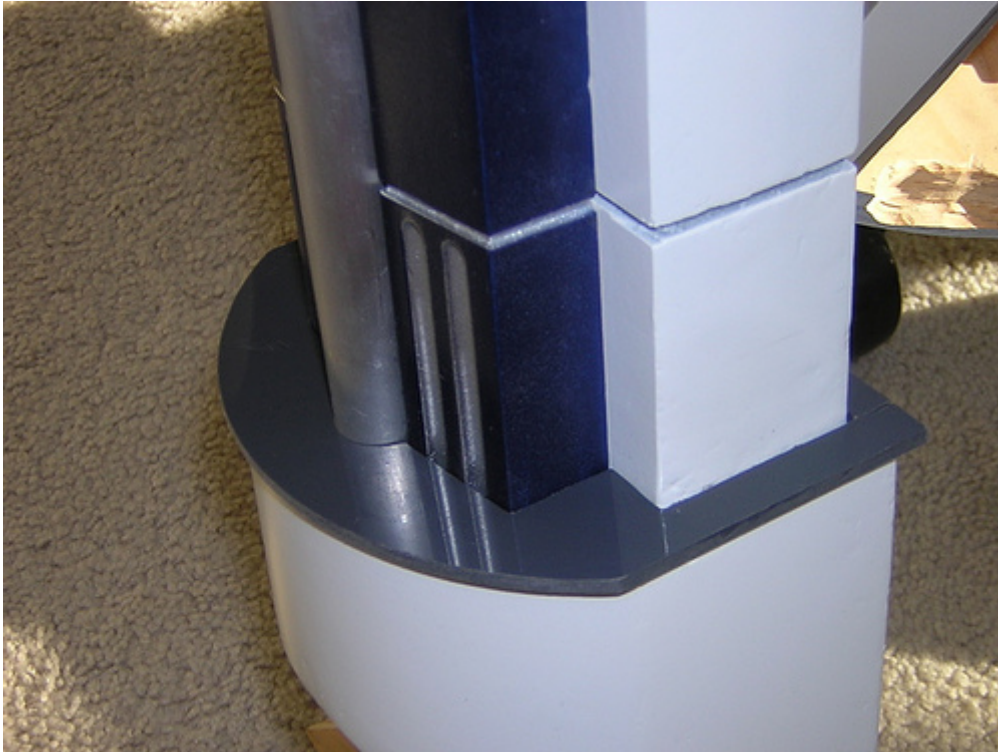
*posted by Victor Franco at 6:36 PM* 0 COMMENTS

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WEDNESDAY, AUGUST 02, 2006

## **Finished Cutting Ankle Brackets**

Today I was able to cut the left ankle bracket and the strips that go around the back. I will glue these in later, but for now I did a loose fit.



The brackets seem to fit around the leg just fine, but my cuts that form the top of the wooden ankles could have been more level. Oh well.

*posted by Victor Franco at 8:32 PM* [0 COMMENTS](#)

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THURSDAY, AUGUST 03, 2006

## Ankle Bracket Primer

Today I sanded the ankle brackets and applied primer to them, in the hope of painting them tomorrow.

*posted by Victor Franco at 11:58 PM* [0 COMMENTS](#)

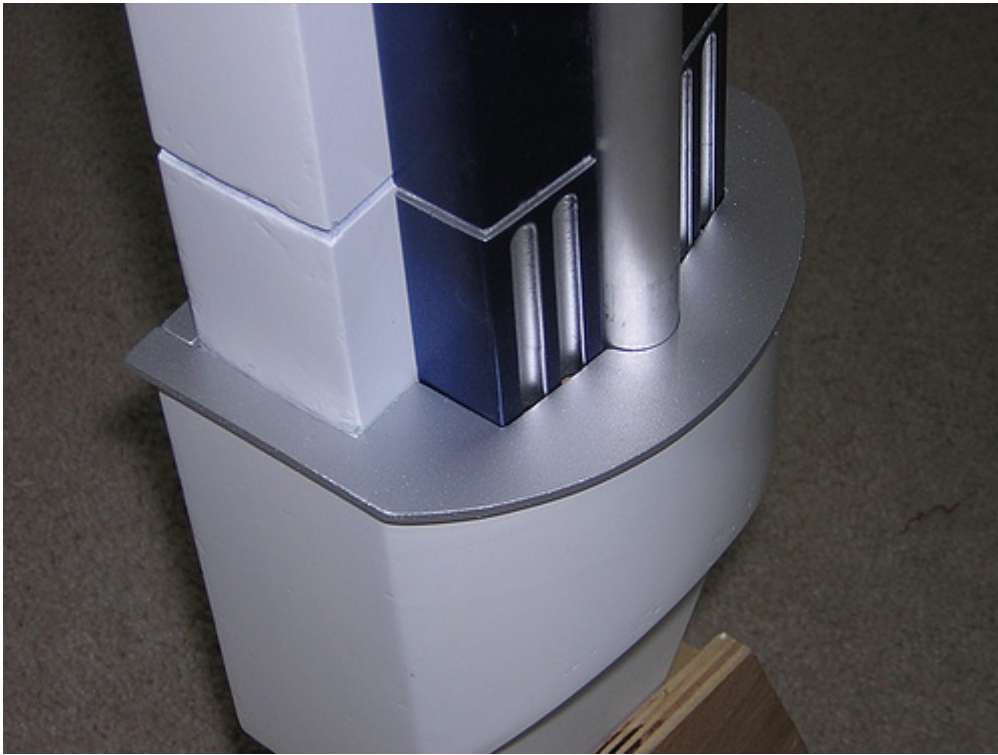
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Q FRIDAY, AUGUST 04, 2006

## Painted Ankle Brackets

I was lucky enough to find more of the Krylon Aluminum Chrome paint today at Ace, so I was able to paint the ankle brackets.





*posted by Victor Franco at 8:13 PM* [0 COMMENTS](#)

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SATURDAY, AUGUST 05, 2006

## **Odds & Ends for Legs**

I performed several leg-related housekeeping chores today.

First, the shoulder hubs didn't quite fit into their holes after the white paint was applied to the legs, so I lightly sanded the shoulder hub holes, and now the hubs fit again.

Second, I noticed that I needed to countersink the wood screw that was holding the aluminum flashing around the shoulder disc in place, so I took care of that.

Next, I hand-painted the armpits for the under shoulder details with Krylon Aluminum Chrome. I didn't want to chance messing up the white paint job on the legs. Hardly any of the armpit area will show once the details are in place, so this didn't have to be perfect.



I wrapped up by gluing the leg strut supports into the hollow part of the ankle. I also applied foil tape around the groove in the leg, to give it its metallic look.



*posted by Victor Franco at 11:27 PM* 0 COMMENTS

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SUNDAY, AUGUST 06, 2006

### **Dome Bump Switch Primer**

I'm going to take a shot at painting my dome bump switches blue. This may not be such a good idea, since they will be touched often for powering on/off the dome electronics. I applied primer today, I hope to paint tomorrow.

*posted by Victor Franco at 10:48 PM* 0 COMMENTS

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MONDAY, AUGUST 07, 2006

### **Taking a Break**

No joke, I'm going to take a break from building for about two weeks, so I won't have anything new to report here for a little while. When I return to building, I'll probably get started on trimming the inner skins to fit the new power couplers.

Thank you to all my regular visitors, I hope I don't lose you while the blog stays quiet.

-Victor

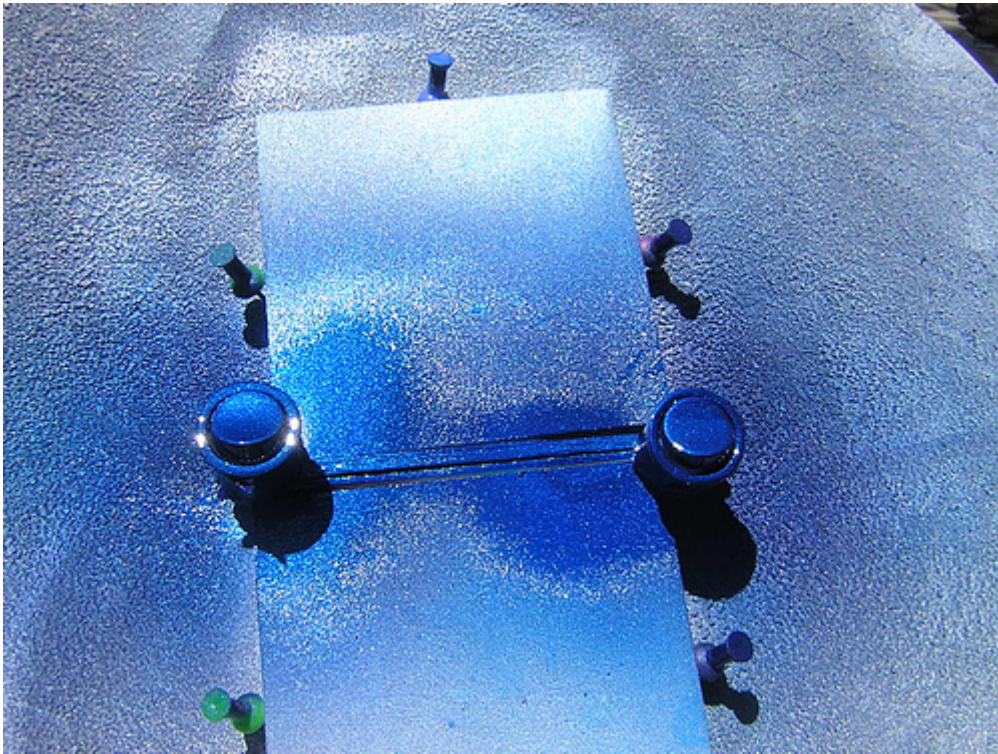
*posted by Victor Franco at 6:32 PM* 0 COMMENTS

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## Painted Dome Bump Switches

Today I painted the dome bump switches blue.



*posted by Victor Franco at 6:22 PM* 0 COMMENTS

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WEDNESDAY, AUGUST 09, 2006

## Where's R2?

While I'm taking a break from building, try visiting:

[Where's R2?](#)

and see if you can figure out where R2 is!

*posted by Victor Franco at 8:20 AM* 0 COMMENTS

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MONDAY, AUGUST 21, 2006

## Back to Building

Well, after two full weeks of building inactivity, I'm finally back from chasing R2 around the Southwest U.S..

I wrote earlier that I planned to work on the power couplers this week, but I'm

going to defer that until next week, as I have other things going on this week and I want to devote my undivided attention to cutting the skins properly. In the meantime I'm working on minor things.

I decided to sand the bottom surface of the ankle details, and the outboard surfaces of the cylinder wedges, to smooth them out. This means... repainting! Hooray!



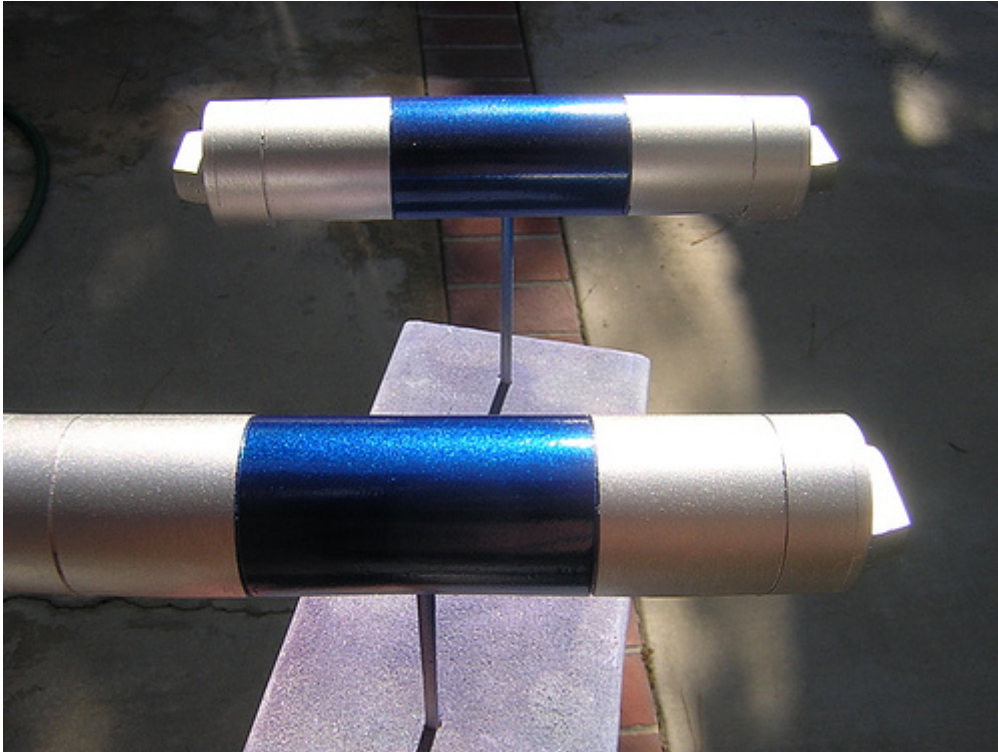
After sanding I applied primer, and plan to repaint tomorrow.  
*posted by Victor Franco at 6:47 PM* 0 COMMENTS

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TUESDAY, AUGUST 22, 2006

## Ankle Cylinder, Detail & Dome Bump Repainting

I repainted the blue area of two of the ankle cylinders today.



I also touched up an area of an ankle detail and a dome bump switch.

*posted by Victor Franco at 5:29 PM* [0 COMMENTS](#)

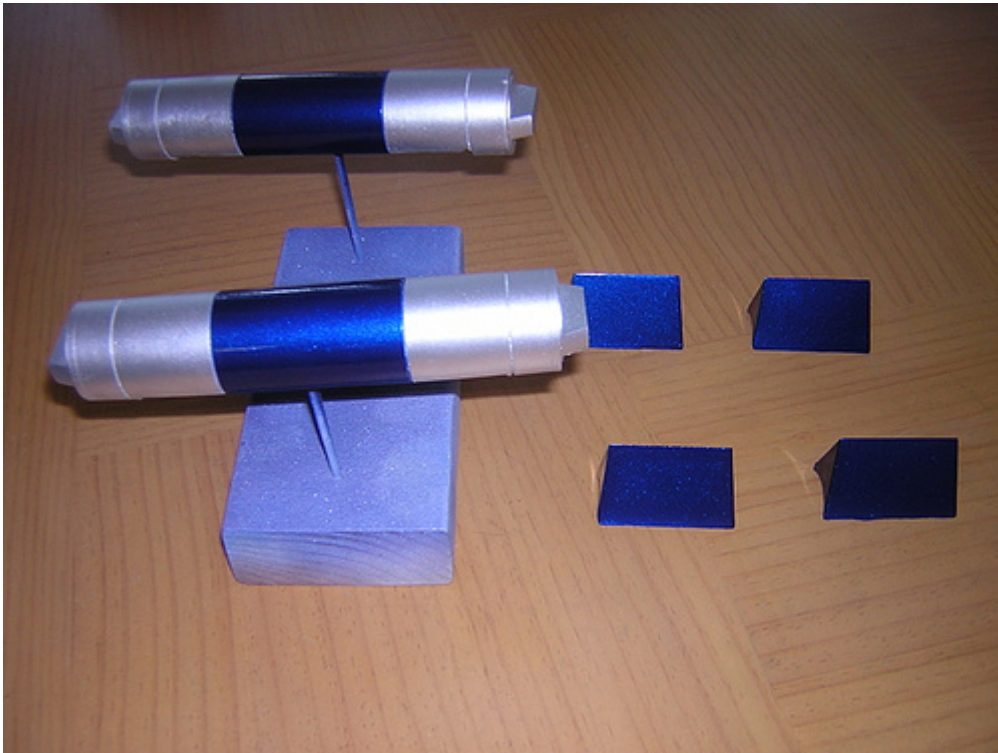
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WEDNESDAY, AUGUST 23, 2006

## Finished Repainting Ankle Parts

I was able to finish repainting the blue areas on the remaining two ankle cylinders, and I also repainted the cylinder wedges. The reason I repainted is that I decided to go back and fill small holes and sand smooth these parts.





*posted by Victor Franco at 7:14 PM* 0 COMMENTS

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SATURDAY, AUGUST 26, 2006

## Where's the Progress??

This is another rare occurrence where I'm posting with nothing new to report. I had intended to get more done this week, but I was busy with other stuff around the house. I still plan to get to work on cutting the skins to accommodate the new power couplers this coming week.

Stuff that still needs to be completed on my droid:

- Dome electronics (may be working on this soon)
- Side vents (awaiting Tim's shipment)
- Pocket Vents (will order from [www.droidstuff.com](http://www.droidstuff.com) when available)
- Internal feet/Drivetrain (I have no idea what I'm going to do here!)

Other stuff needs to be mounted and/or assembled, like the ankle parts, batter boxes, budget feet, etc.

What's that line about the last 10% taking 90% of the time?

*posted by Victor Franco at 12:51 PM* 0 COMMENTS

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MONDAY, AUGUST 28, 2006

## Dremeled Skins for Power Couplers

I *finally* had a chance to get to work on cutting the skins to accommodate the new power couplers.

Before doing anything else, I had to completely obliterate my droid. I was hoping I would never see it like this, but sometimes you have to take a few steps backward in order to move forward.



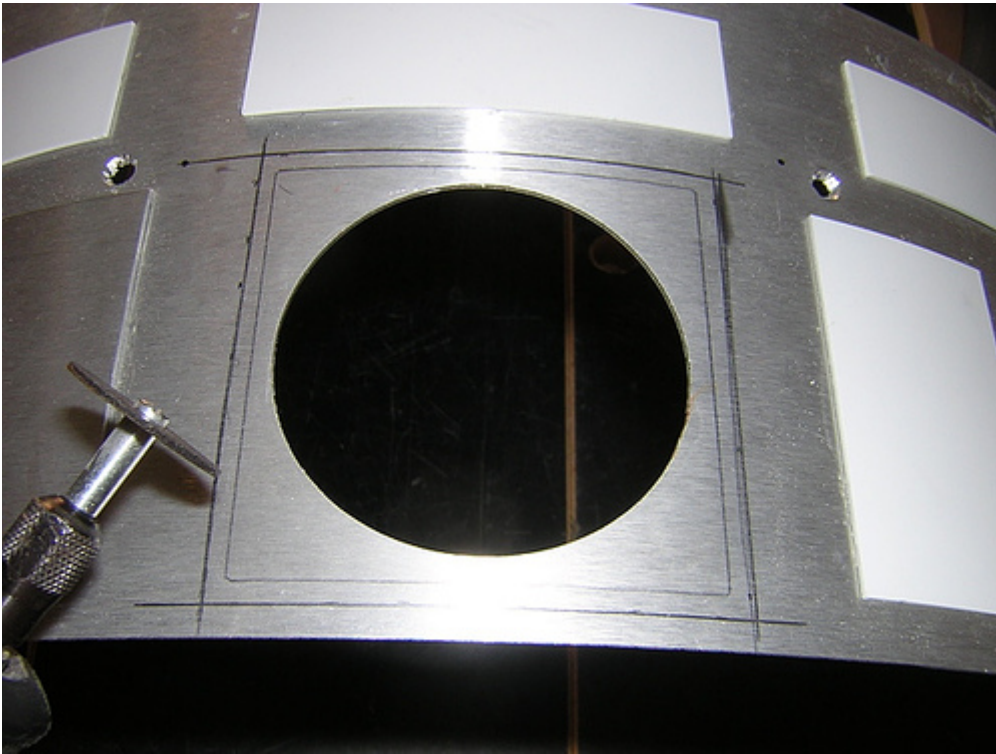
Ouch.

Why the mess? I needed to remove the front skins for cutting, and to get to all the screws that hold the skins to the frame, the legs must come off. The skirt also had to come off to rest the frame on a flat surface for later, when I needed to cut more space out of the frame itself for the power couplers.

The skins did not come off without a fight. I had used silicone to secure several of the panels, and the silicone had bonded to the wood in the frame. But with some careful work, I was ultimately able to get the front skins off.

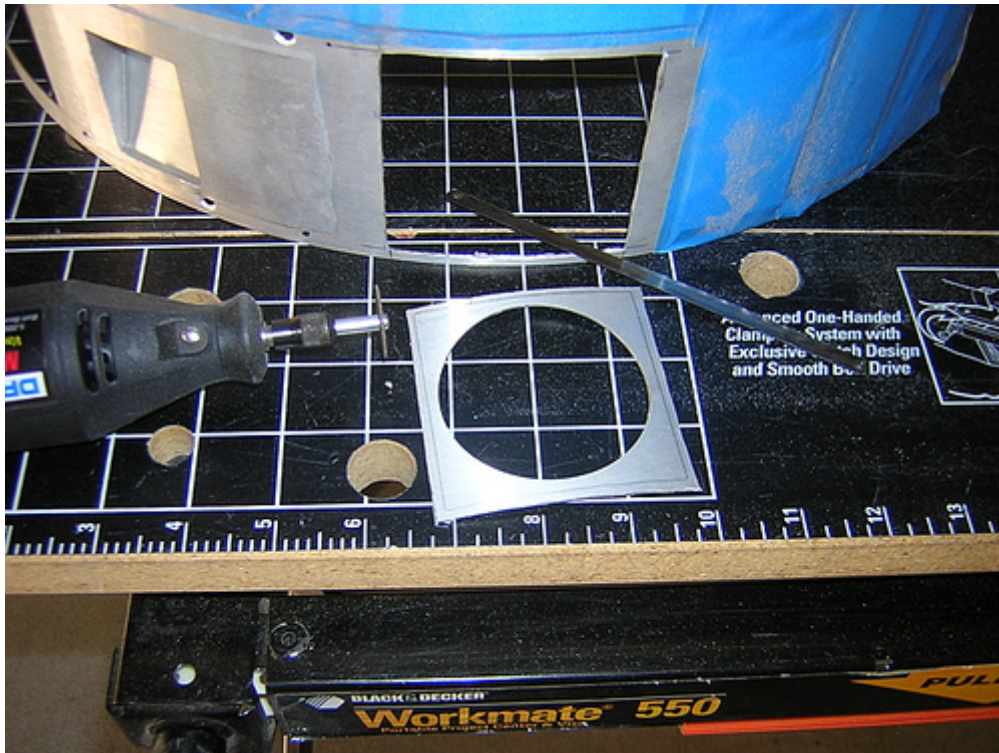
Since this may be my last chance to see my droid this skeletal, I decided to pry off the lower utility arm's pivot holder, since I never did like how far back the pivot point sat. I'll work on fixing that after everything is put back together.

Okay, so back to cutting the skins. I marked the outline at which to cut, about 1/8" beyond what is visible on the outside, and used the Dremel cutoff wheel attachment to start cutting.

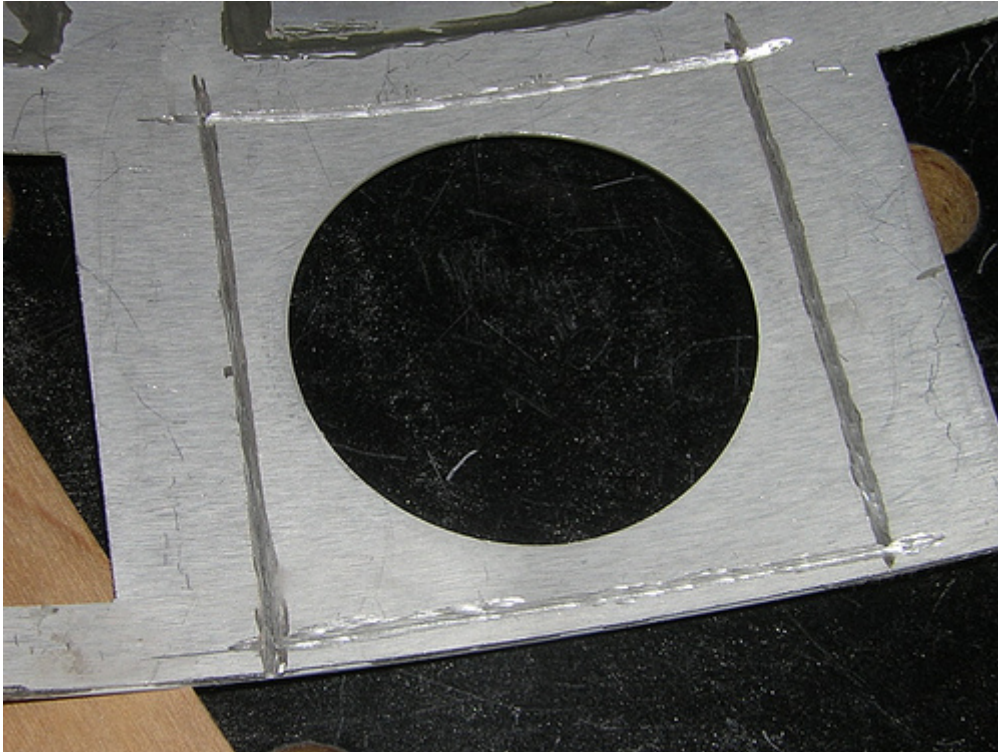


With care and patience, I got the power coupler area cut from the front inner skin. (The outer skin doesn't get touched for this surgery.)

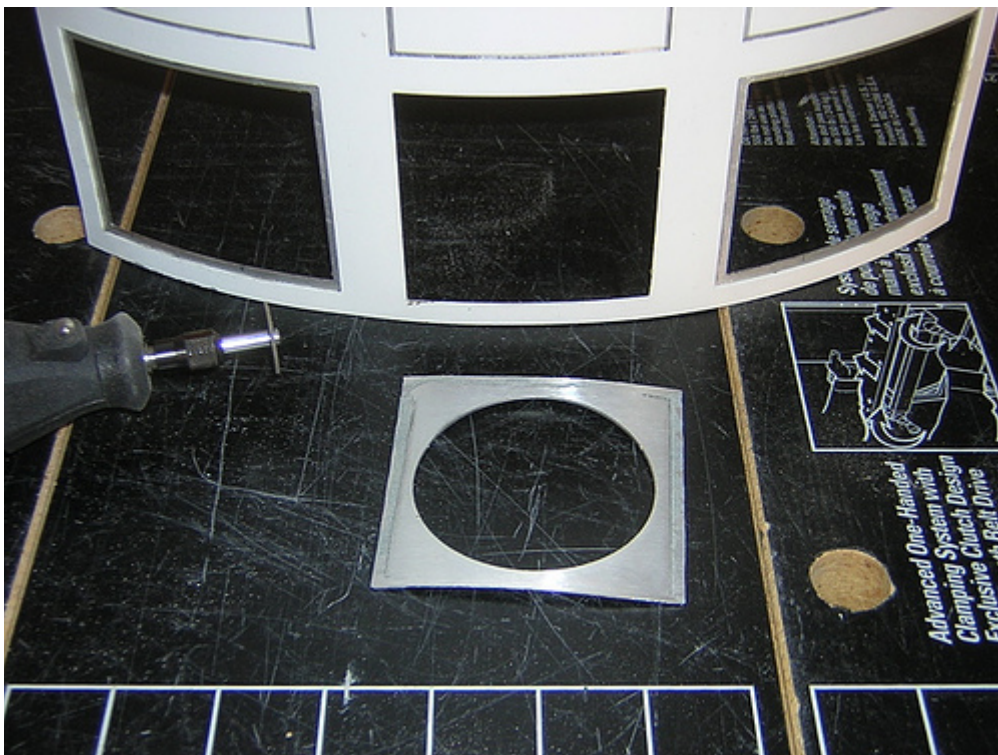




Next up, the back panel. This is trickier, because unlike the rest of the skins, the inner and outer skins of the back panel are JB Welded together. Thus, I had to cut *only* the inner skin, leaving the outer skin as untouched as possible. I Dremeled very slowly and carefully, keeping a watchful eye for when I could see that I had cut through the inner skin.



Again, with much patience and care, I managed to remove the inner skin's power coupler area. I also removed my coin returns from the back panel, since I had inadvertently swapped their positions. I will fix this too shortly.





The skins are not the only thing requiring work to accommodate the power couplers. Due to the new power coupler frame, I must Dremel out a larger area in the frame as well. I only had time for the front power coupler area today, I hope to use the router to route out the rear power coupler area tomorrow.



The day would not be complete without a loose test fit of the front and rear power couplers against the skins.





*posted by Victor Franco at 9:53 PM* 4 COMMENTS

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TUESDAY, AUGUST 29, 2006

## Cut Frame for Power Couplers, Pocket Vents, Cleaned Up Skirt Rib Seams

I was able to route out the rear power coupler area in the back of the bottom plate of the frame today. The routed area was left unlevel intentionally, as the round part of the power coupler sits higher than its frame. Even so, I'll probably need to put raise the power coupler a bit, I think I routed a tad too much material off.



I also Dremeled out the areas for the pocket vents. Not having the actual vents, I could only go by the blueprints. I hope I Dremeled out enough material!



While the skirt was off, I decided to go back with white silicone, and fill in some visible seams where the ribs are attached on the skirt.





At long last, it was time to start putting Humpty back together again.

Yesterday I had to pry off the blue panel that surrounds the front vents, so I reapplied silicon and used the clamps to hold the vent surround in place overnight.



I need to Dremel out a tiny bit more material for the front power coupler, and I want to start drilling the legs to attach the ankle details. Hopefully I'll get to all that tomorrow.

*posted by Victor Franco at 10:18 PM* 3 COMMENTS

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WEDNESDAY, AUGUST 30, 2006

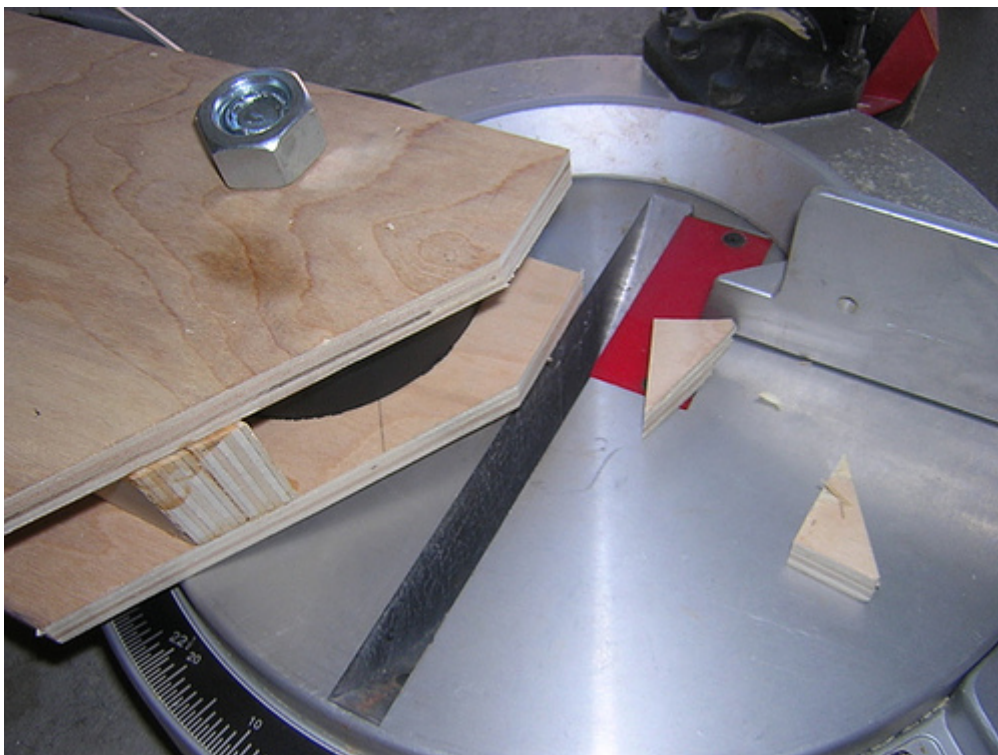
## **Touched Up Ankle Detail, Trimmed Temp Feet, Widened Power Coupler Area, Masked Power Couplers, Reseated Lower Arm**

I tackled a bunch of different stuff today.

First, I touched up a bit of the blue paint on one of my ankle details. I used a fine bristle brush to hand paint the purple, blue and clearcoat layers on, one at a time.



Turning to the feet, the points on the ends of my temporary outer feet had been annoying me for a long time. They kept catching on the carpet, and I occasionally stabbed myself with them, so I trimmed the points off.





I needed to Dremel out a little more material from the frame where the front power coupler sits. I thought I had removed enough material the other day, but a test fit with the skins on proved me wrong. So with my shop vac at the ready, I carefully Dremeled out a bit more material.



Next up, I took a tip from Alan Wolfson, and purchased some liquid latex for masking complicated areas that need to be painted. The power couplers are just such an example, as they have areas that need to be painted blue that are machined deep into them. I used a paint brush to apply the liquid latex. I'll let it dry overnight, and the parts should be ready for painting tomorrow.



Finally, I resealed the lower utility arm in the frame. I had been wanting to do this ever since [I originally installed the arm](#). I pried off the MDF pivot-point holder from the horizontal rib a couple of days ago, and I reglued it down in a better position tonight.



*posted by Victor Franco at 11:01 PM* [1 COMMENTS](#)

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THURSDAY, AUGUST 31, 2006

## Attached Left Rear Coin Return, PSI Covers, Primed Power Couplers, Attached Ankle Details

Another eclectic day.

I started by using silicone to attach the left rear coin return. If this looks familiar, it's because [I did the same thing earlier](#), only I had the pocket of the rear coin returns away from the center of the back door, when they should have been toward the center.



Following a tip from Doug Dixon on the board, I obtained a plastic template sheet to use as a cover for the front and rear Processor Status Indicators (PSIs). I won't know how good these work until I have the PSIs with LEDs installed, but for now they are covering up those annoying holes. I cut two layers and used masking tape to attach them to the inside of the dome.



## Plástico para Template de Servicio Pesado

Para hacer templates de aplicación, obra de pedacitos o acolchado • Extra durable para uso repetido  
Translúcido para trazar patrones y ponerlos en posición en la tela • Corte con tijeras, cortadora rotatoria o  
cuchilla de artesanía

- Para empalmes a máquina, añada 6mm al template para un margen de costura.
- Para aplicaciones y empalmes a mano, corte templates al tamaño exacto de la forma acabada. Trace en la tela  
añadiendo para la costura antes de cortar.
- Si se corta con tijeras, guíe y rote el plástico hacia las hojas de la tijera para asegurar una orilla lisa.

## Plastique ultra robuste pour patrons

Conçu pour réalisation de patrons pour appliques, patchwork ou courtoisies • Extrêmement robuste pour  
permettre de multiples utilisations • Transparent pour permettre le décalquage des motifs et de les placer  
sur le tissu • Découper avec des ciseaux, un couteau rotatif ou un couteau d'artisanat

- Pour assemblage à la machine, ajoutez 6mm au patron pour les coutures.
- Pour appliqué et un assemblage à la main, coupez les patrons aux dimensions  
exactes de la forme finie. Tracez sur le tissu en ajoutant la largeur désirée pour les  
coutures avant de couper.
- Si l'on découpe aux ciseaux, guidez et tournez le plastique dans les ciseaux pour  
garantir un bord lisse.



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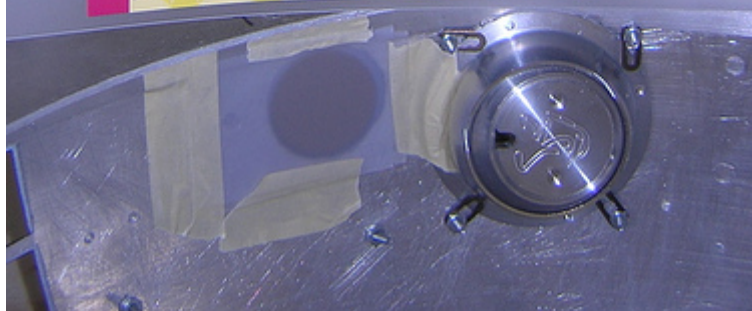
**Dritz**  
Quilting

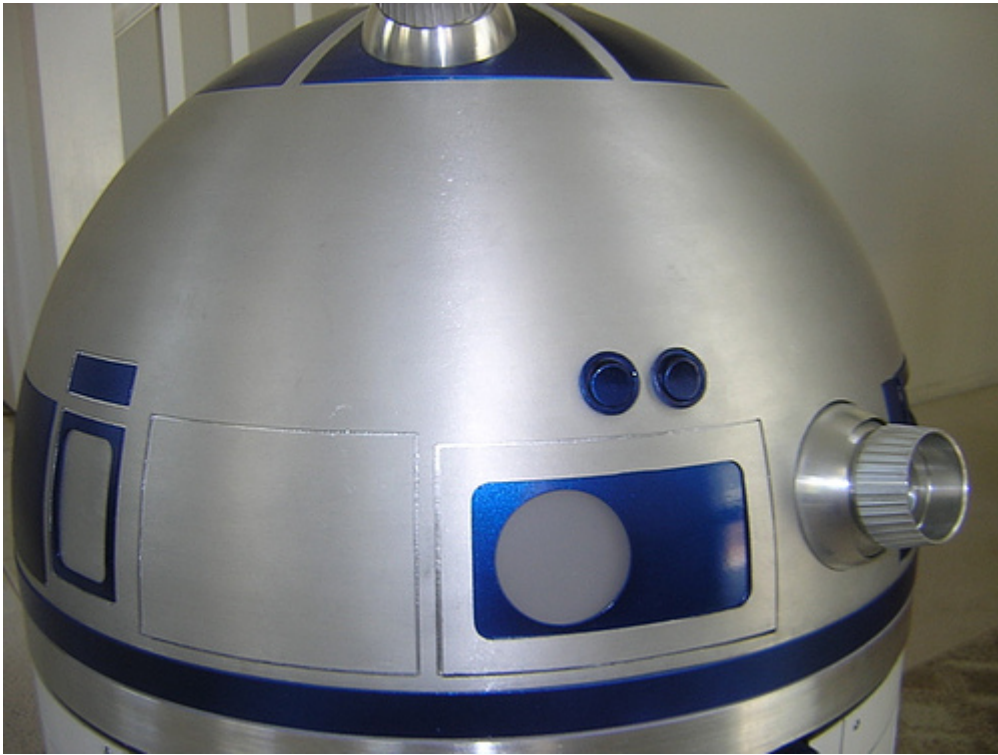
For making appliqué, patchwork or quilt templates • Extra durable for repeated use • Translucent  
for tracing patterns and positioning on fabric • Cut with scissors, rotary cutter or craft knife

- For machine piecing, add 1/4" seam allowances to templates.
- For appliqué and hand piecing, cut templates the exact size of finished shape. Trace onto fabric, adding  
desired seam allowances before cutting.
- If cutting with scissors, guide and turn plastic into scissor blades to insure a smooth edge.

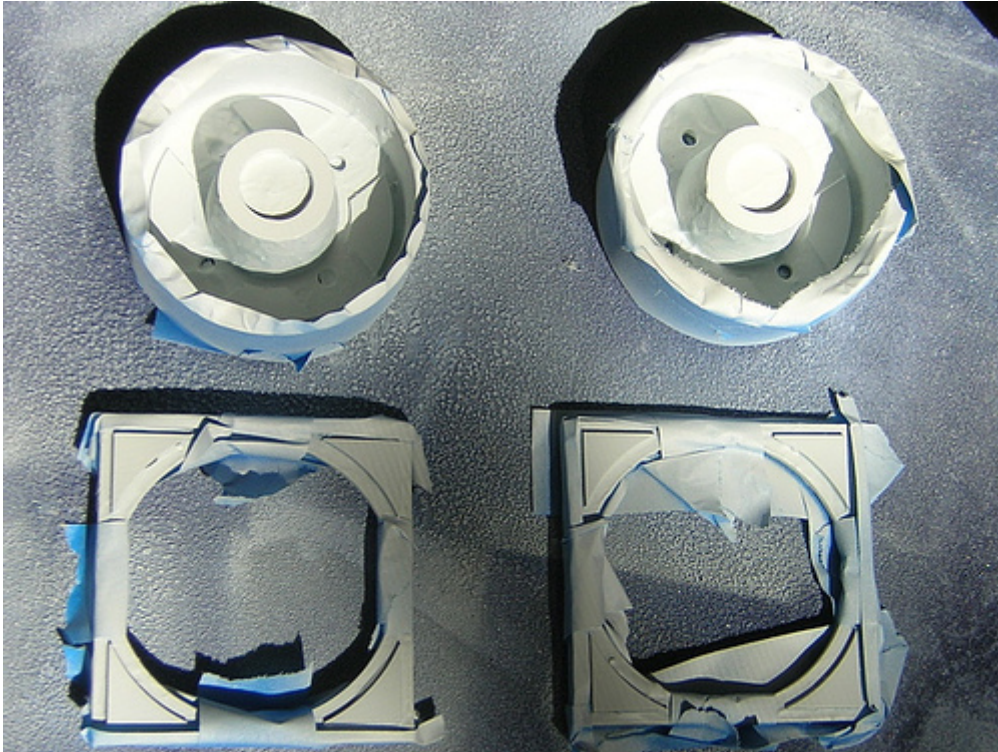
12" x 18"  
(30cm x 46cm)

**Heavy Duty Template Plastic**





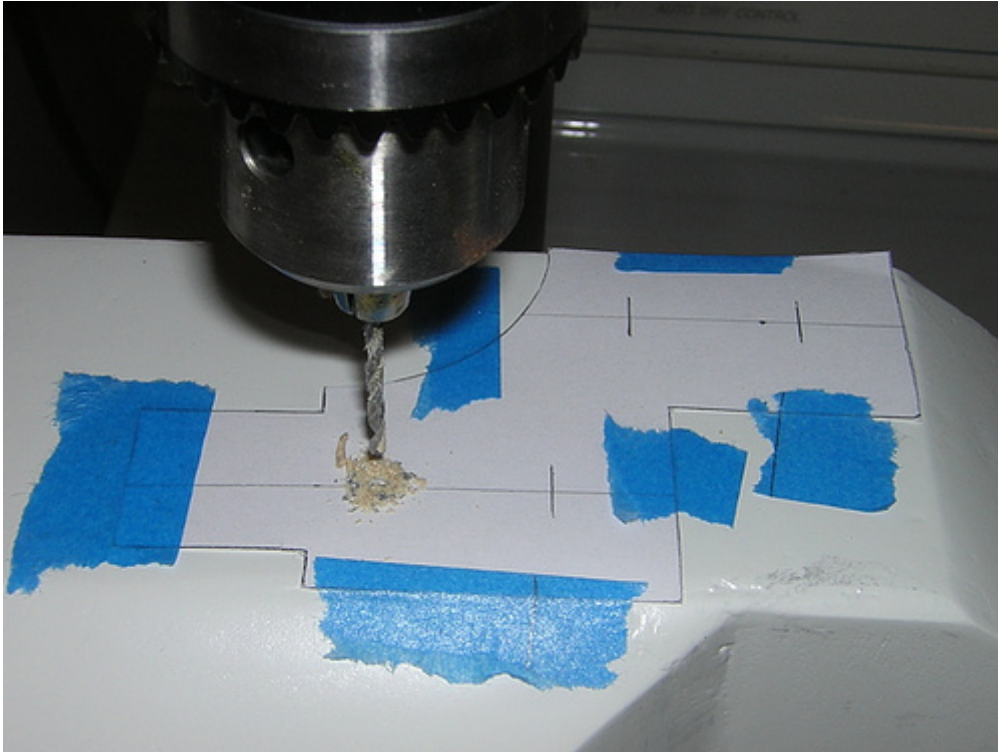
In the afternoon I applied three coats of primer to the coin returns. I'll wait 24 hours and then try painting them blue. Recall that I used the liquid latex to mask all the areas that are not to be painted. I'll have to wait until Saturday to see if that worked, when the paint should be dry enough to peel off the latex.



I finished the day by attaching the ankle details.

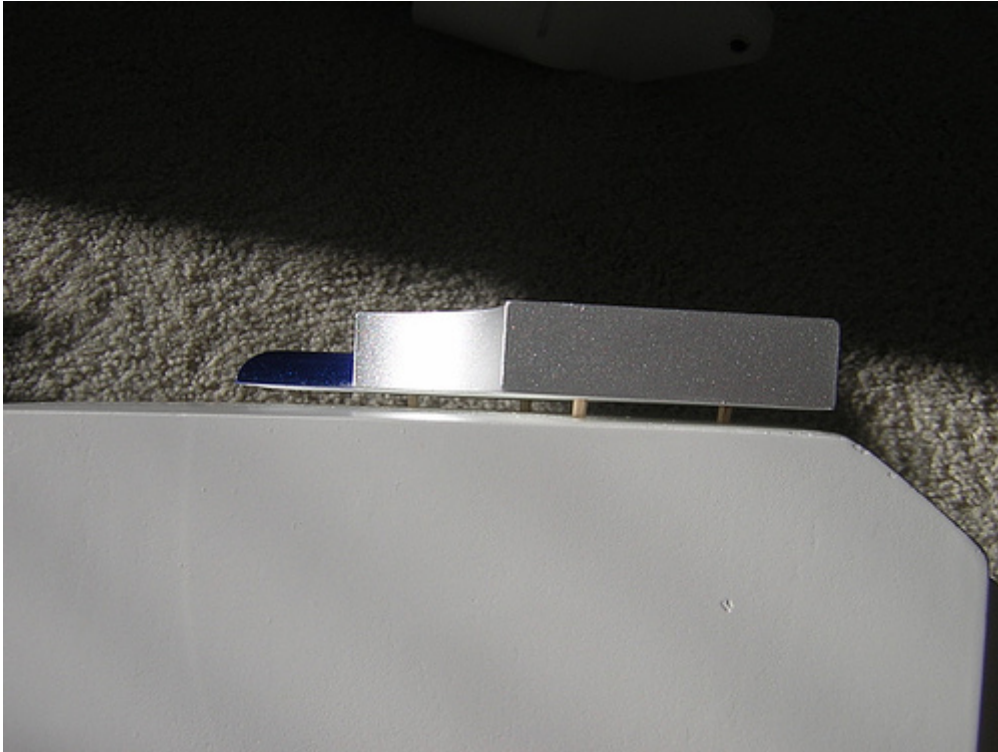
First, I traced the outline of one of the resin ankle detail pieces onto a sheet of paper, and cut it out. Then, I taped the template to the legs, and drilled through the template and into each side of each leg, about 1/4" deep. I drilled four holes per ankle detail.





After drilling the legs, I used the same paper template and taped it to the back of the resin ankle detail pieces. I drilled through these one at a time, again about 1/4" deep. Then I used a hacksaw to cut 16 toothpicks to size. (That was fun...)

Then it was time to put it all together.



Believe it or not, this worked out very well. The ankle details fit on very tight, so tight that it will be a struggle to get them off again. Let's hope I won't have a need to take them off for a *very* long time.



*posted by Victor Franco at 9:04 PM* [2 COMMENTS](#)

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FRIDAY, SEPTEMBER 01, 2006

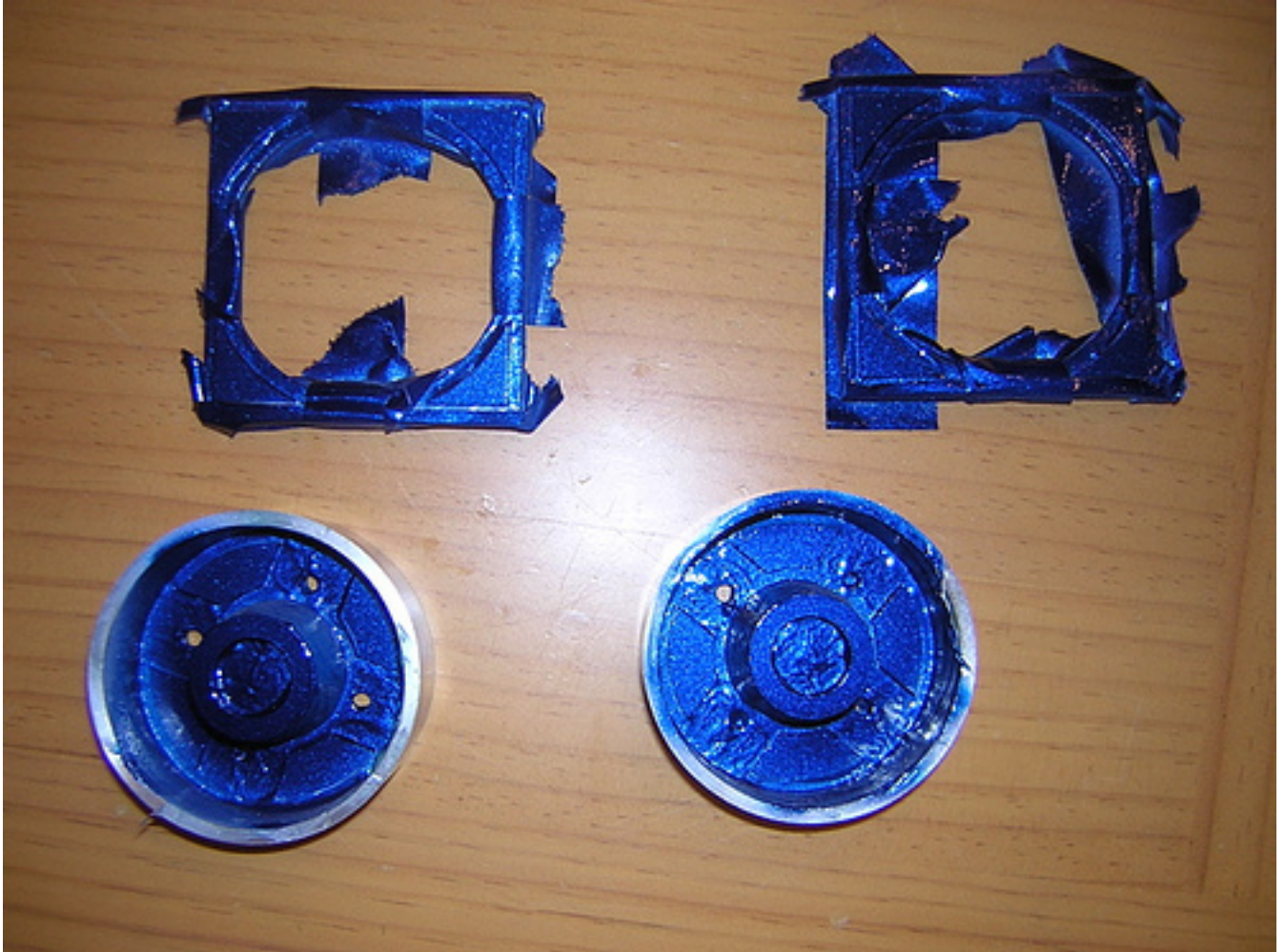
## Reglued Left Rear Coin Return, Trimmed Temp Feet Tops, Painted Power Couplers, Finished Outer Legs

Hmm. For whatever reason, the silicone for the left rear coin return didn't stick. The silicone was from a never-before-opened tube, so I don't think it was bad. I probably just did a bad job. Anyway, I reglued it, and hopefully it'll stick this time.

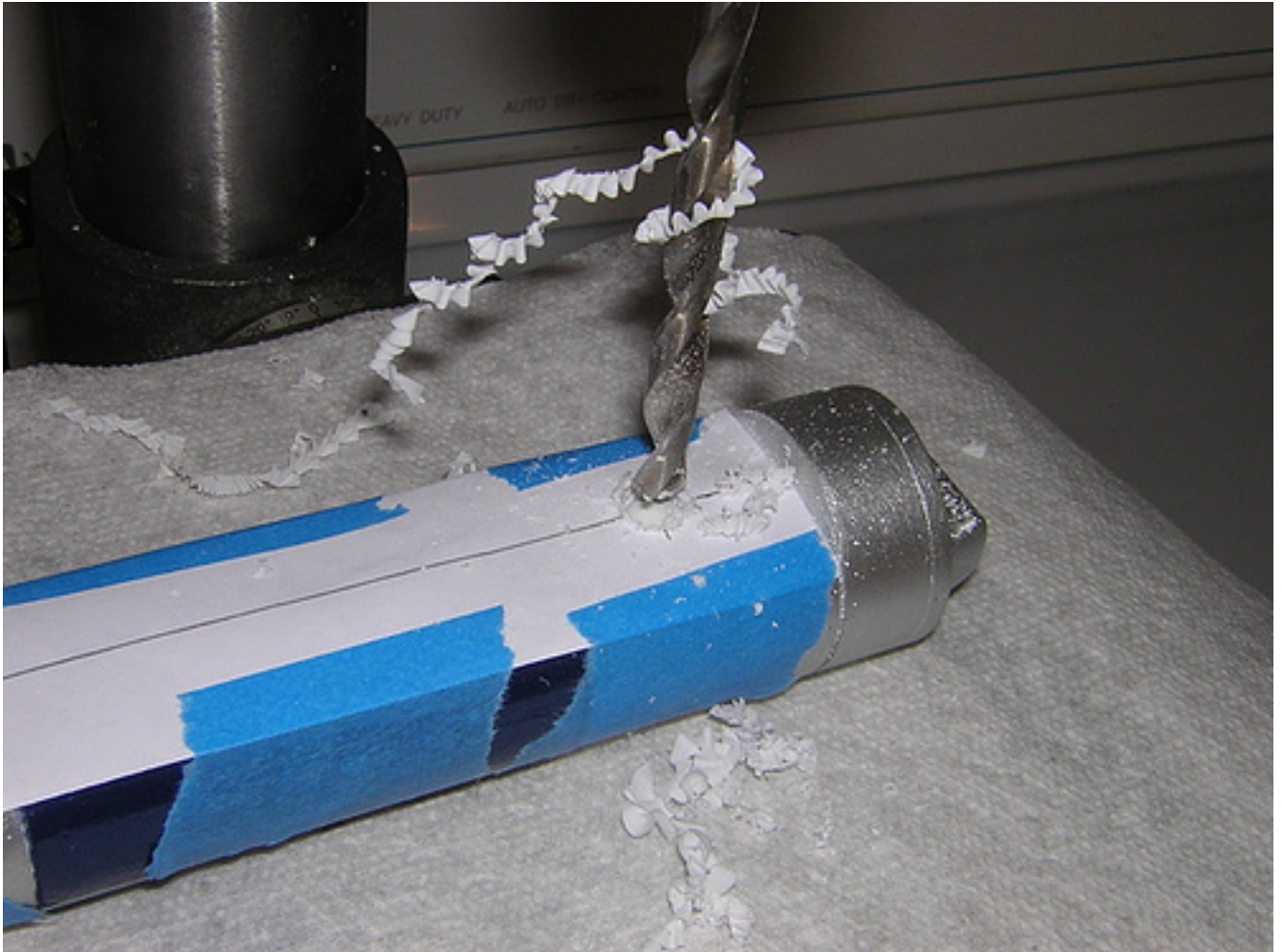
I had more foot work to do too. I needed to trim about 1/4" off the top of my outer temporary feet, to leave clearance for the cylinder holders that ride above the feet. The other nice thing is that the temporary feet now fit into my budget foot shells, in case I ever want or need to put them on before I have real feet.

I was able to paint the power couplers blue today. Here's where the faith in the latex kicks in. After a few hours of drying time, I couldn't resist just slightly peeling the edge of the latex to see how effective it was. I was happy to see it was doing exactly what I had hoped, shielding the aluminum from the paint. I know this looks like a mess, but that's because the latex was applied thick and unevenly.





Next, I turned to installing the ankle cylinders. I purchased 1"x1/4" diameter dowels to use for mounting the cylinders. I made (yet another) paper template for locating the mounting holes. I taped the template onto each outer resin cylinder, and drilled the cylinder first.



Then I transferred the template to the wooden legs, and drilled those.

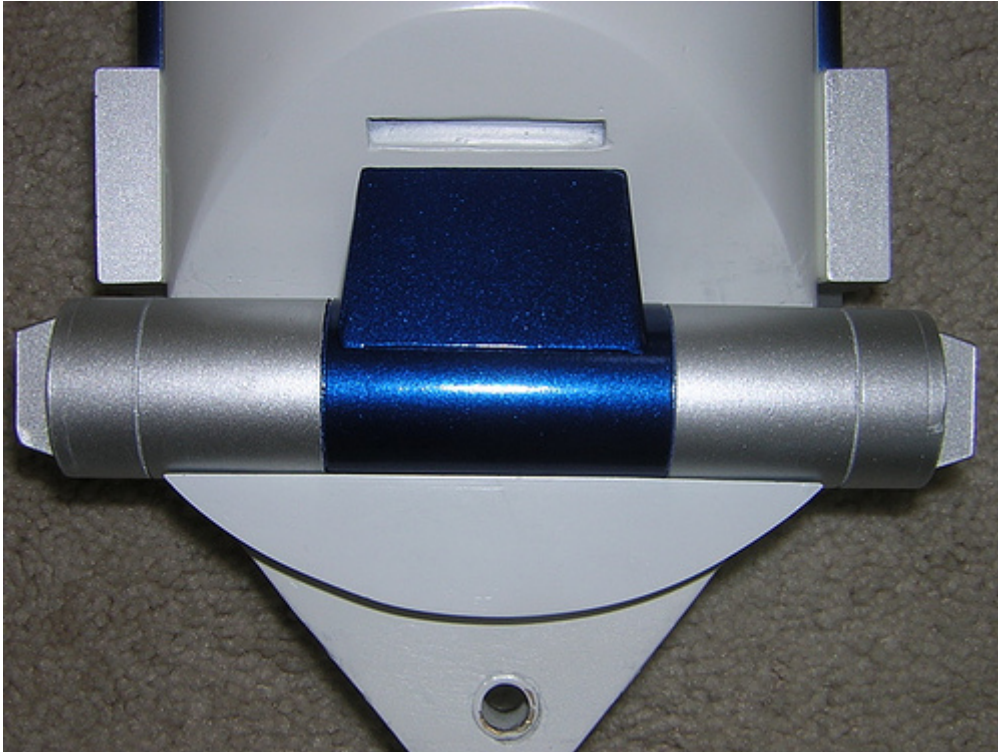


I inserted the dowels, and then I mounted the cylinders.





I used silicone to attach the cylinder wedges and holders.



I wrapped up the day by using (what else?) silicone to install the under shoulder details. I'd like these in aluminum, but I didn't want to wait indefinitely for them to be offered. Besides, with silicone holding them in, they should be fairly painless to swap out should I obtain an aluminum set.





*posted by Victor Franco at 10:08 PM* 0 COMMENTS

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SATURDAY, SEPTEMBER 02, 2006

## Mounted Center Leg Cylinders, Unmasked Power Couplers

Wow, that liquid latex worked well! But I'm getting ahead of myself. First things first.

More of the same, I repeated yesterday's exercise for installing the ankle cylinders, this time on the center leg.



While the left cylinder and wedge fit well, the right wedge didn't fit so great. I'm left with either a gap between the wedge and the cylinder, or a gap between the wedge and the leg. My solution? For now, I only have one dowel holding the



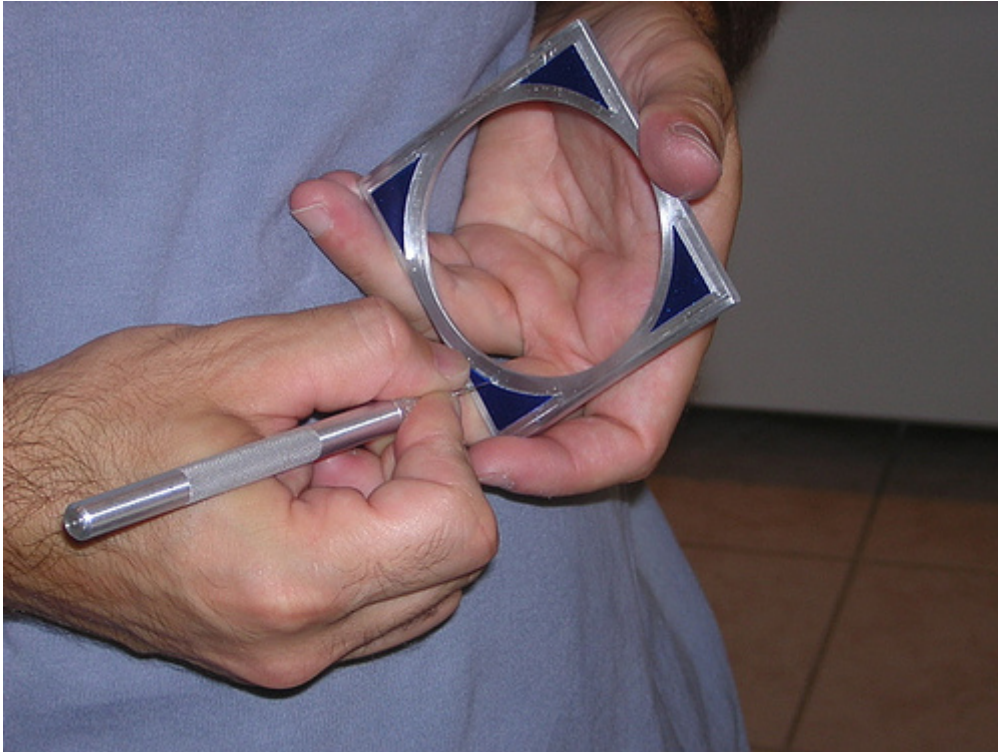
cylinder in place, and I let the side of the leg support the other side of the cylinder as it "wraps" around the leg's edge (if that made any sense...). The very slight tilt of the cylinder allows the wedge to fit better, and the tilt is not noticeable.



Okay, now back to the power couplers. I really had no idea what to expect from the latex mask. I slowly and carefully unpeeled the latex from the inside ring of the power coupler.

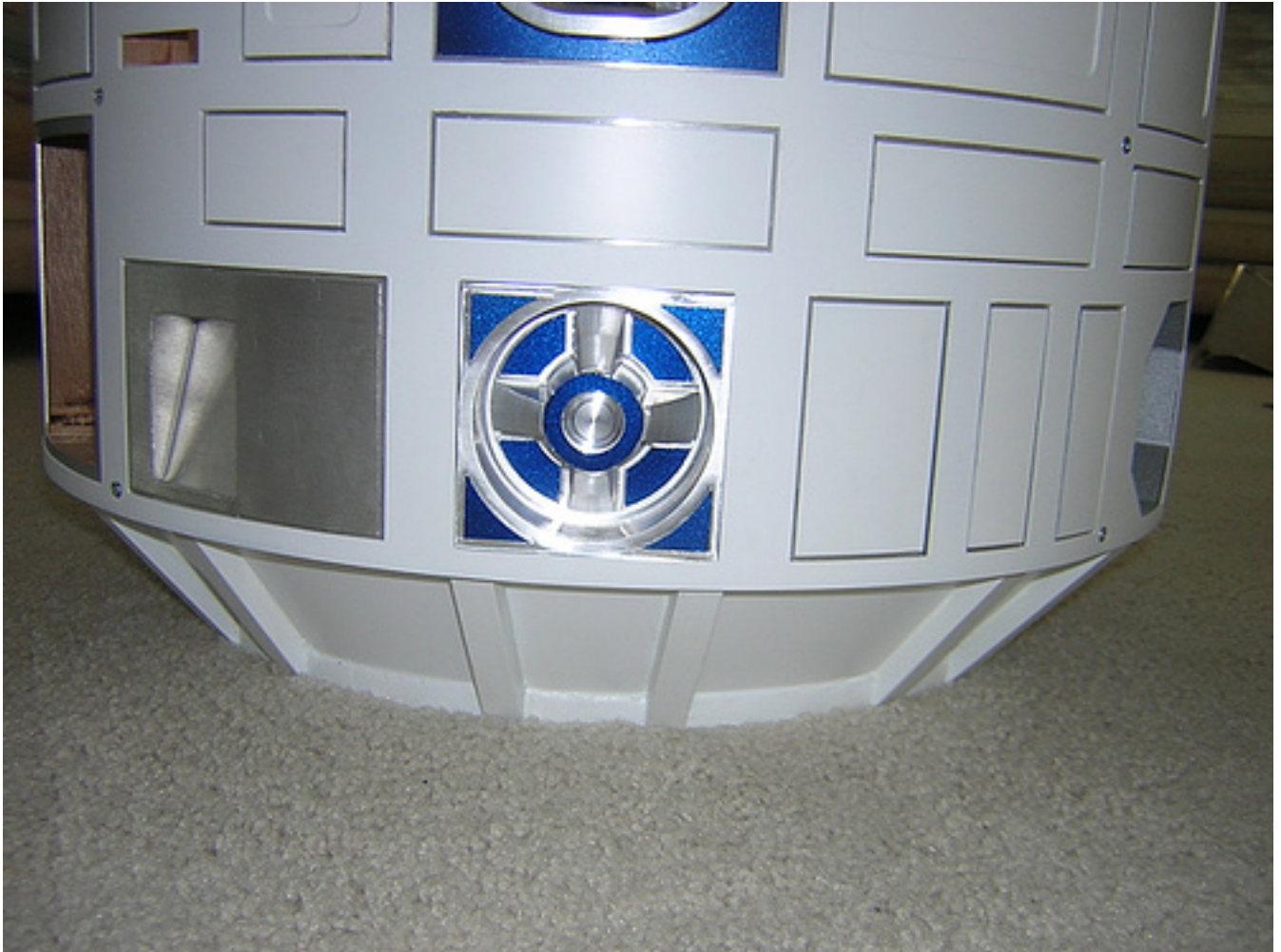


After getting the bulk of the mask out successfully, I used an Xacto knife to trim the edges of the mask on both the main power coupler body, and the power coupler frame.



I must say, it turned out really well. I couldn't be much happier. I gave it the usual loose-fit trial.





I also did some very minor blue paint touch-up on the booster covers and center leg cylinder wedges.

Believe it or not, a second attempt at gluing the left rear coin return *still* did not work. I finally realized that even an unopened tube of silicone must have a shelf life. The "new" tube I was using was from December 2005, which I didn't think was that old. Nevertheless, I bought a new tube tonight, and this time the silicone seemed to behave better. Here's hoping the third time's the charm.

*posted by Victor Franco at 10:56 PM* [7 COMMENTS](#)

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SUNDAY, SEPTEMBER 03, 2006

## Together Again

He may not have a sound system yet, but R2 was singing "Reunited" tonight. What a difference a week makes.



So... what's next? I think I'm going to focus on the dome electronics. I have the Ben/Jason/Dave logic displays (they are great!), and I have Dan's PSIs on order, they should arrive in the not too distant future. I guess I need to start thinking about how I'm going to mount these in the dome. Needless to say, I'll be studying Mike's design.

*posted by Victor Franco at 10:56 PM* 2 COMMENTS

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MONDAY, SEPTEMBER 04, 2006

## Glued in Right Rear Coin Return

This morning I glued in the right coin return on the back door.



The left rear coin return and I are not on speaking terms at the moment.

*posted by Victor Franco at 8:43 PM* [2 COMMENTS](#)

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TUESDAY, SEPTEMBER 05, 2006

## Goofed Around with Front Logics

This doesn't really warrant posting, but since I have nothing else, I started modeling the front logics in the dome to see what filing I need to do to get everything to fit.

The top display fits okay, but the bottom is a bit tight. I think it's the inner dome's crossbar between the top and bottom displays that is the problem, so that will get filed a bit.





*posted by Victor Franco at 8:58 PM* 0 COMMENTS

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WEDNESDAY, SEPTEMBER 06, 2006

## Discussed Feet & Logics with Mike

Again, no real building today, but some planning.

I met with Mike to discuss a strategy for a drivetrain and internal feet. It looks like if I can find the right aluminum stock, I will be able to fashion feet using that and the aluminum channel that I purchased from Darryl a while back. For now, that's on the back burner, though.

We also discussed dome electronics, specifically the front and rear logics. Mike showed me the front logic harness he built from PVC, so I'll try building one, hopefully starting tomorrow. I still need to do a little bit of filing on the dome to get the front logic bezels to fit.

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*posted by Victor Franco at 11:36 PM* 0 COMMENTS

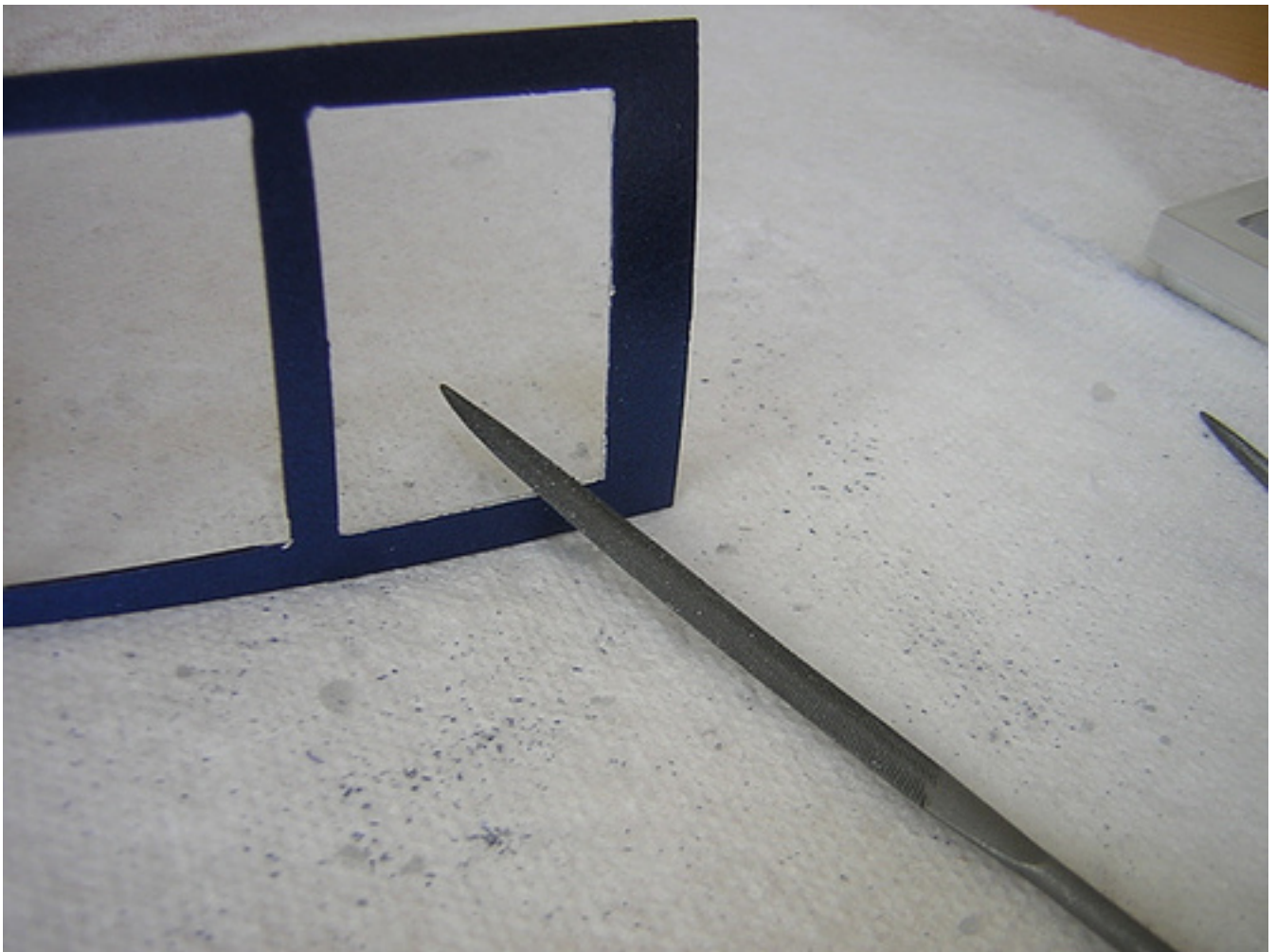
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THURSDAY, SEPTEMBER 07, 2006

## Filed Front Logics Dome Panel, Cut Front Logic Harness, PSIs Arrive

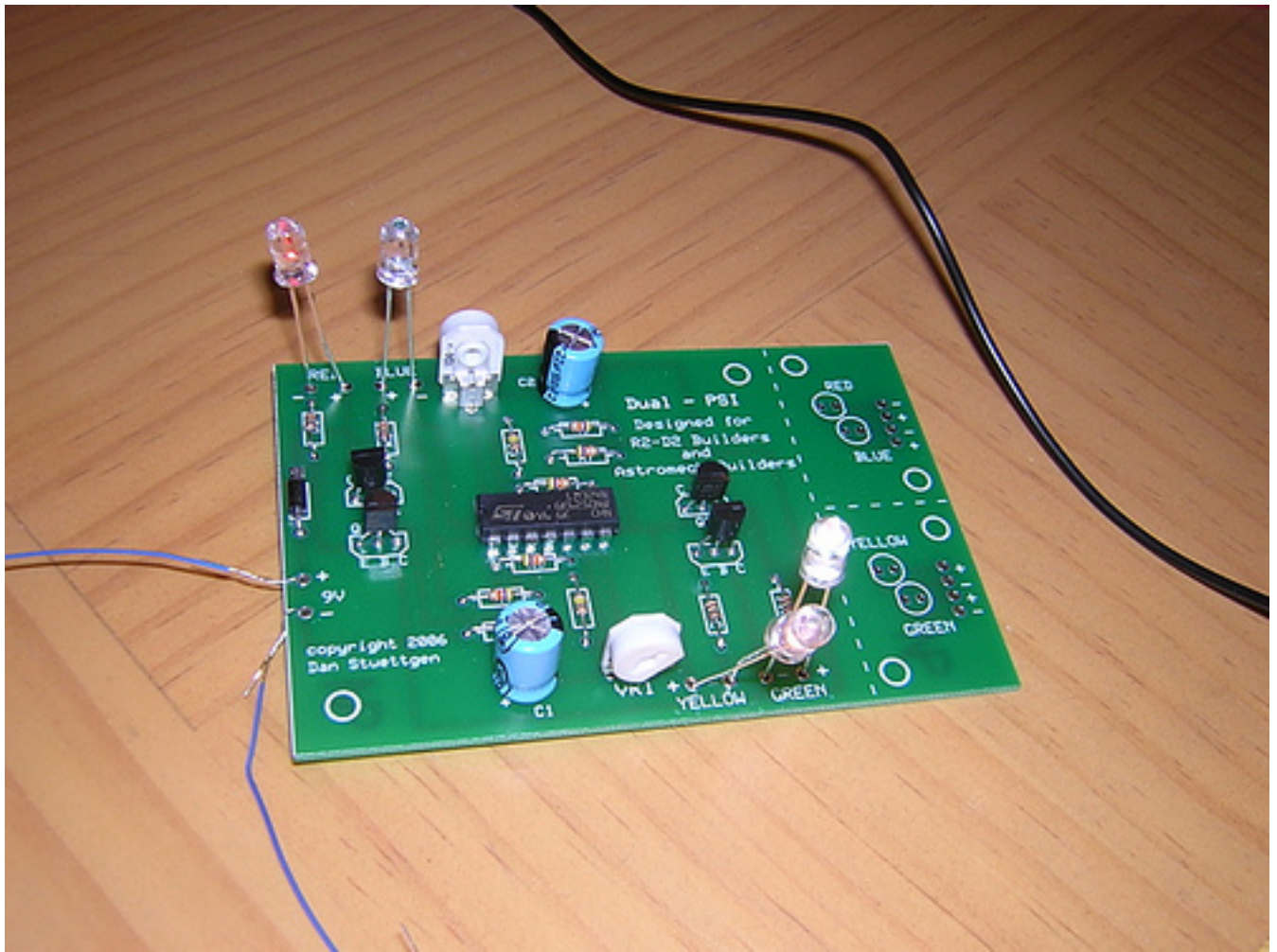
Today I started work on the front logics.

First I pulled off the outer dome panel where the front logics go, as it required a bit of fine filing to get the bezels through.



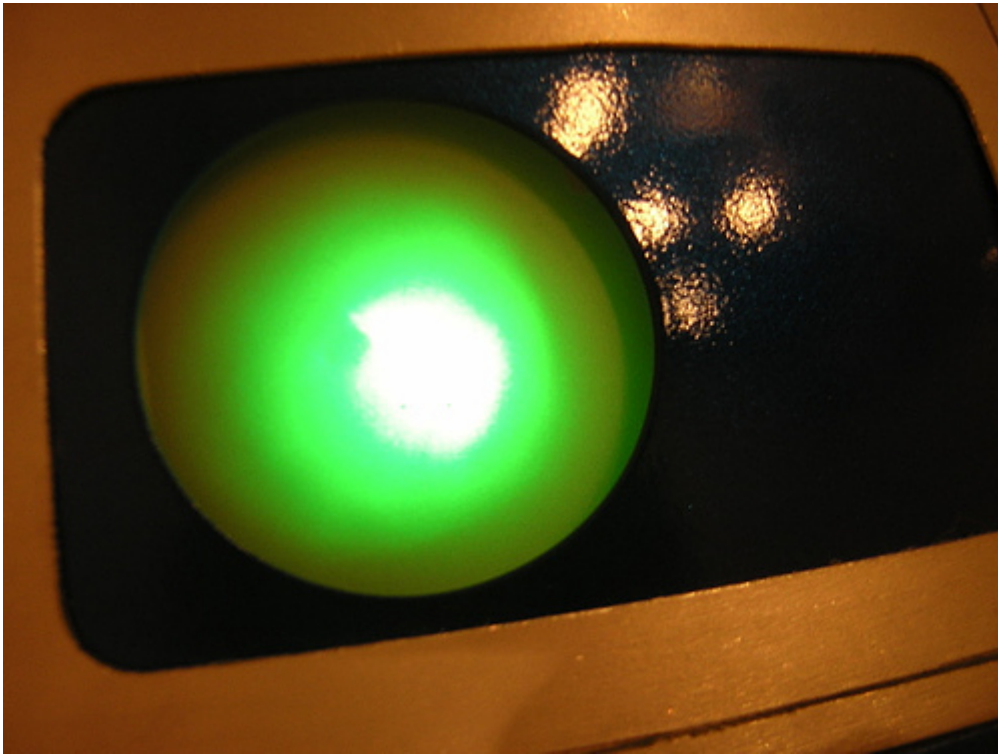
I cut pieces of PVC that will form a housing around the front logics, inside the dome. I hope to start gluing the housing together tomorrow.

Dan Stuetgen's PSI boards arrived today.



I couldn't help playing with them, and holding them inside my dome. Obviously I need to work on diffusing the LEDs.





*posted by Victor Franco at 11:25 PM* 0 COMMENTS

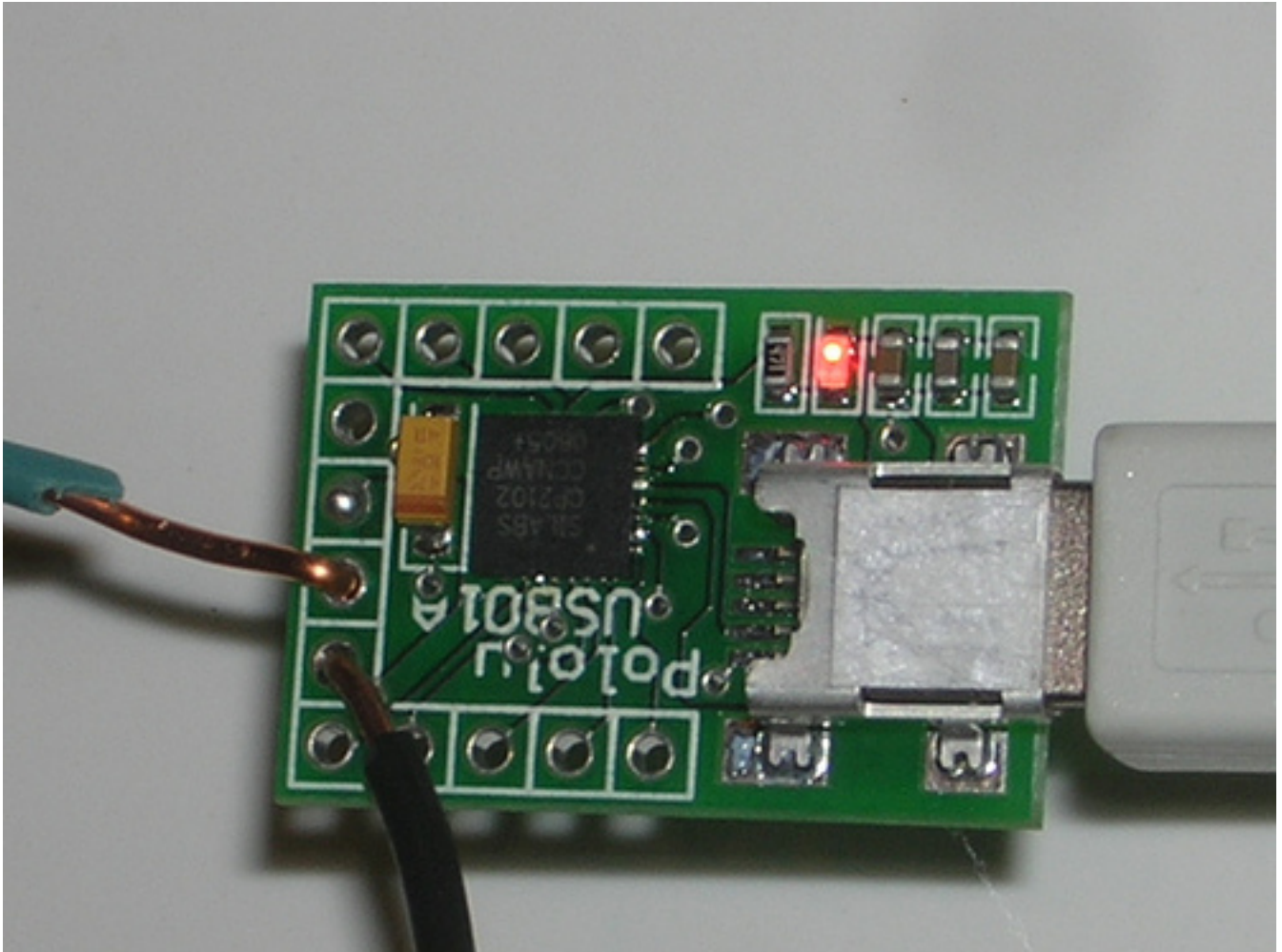
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FRIDAY, SEPTEMBER 08, 2006

## More Goofing Around with Dome Electronics

I was supposed to glue together my PVC harness for the front logics today. Unfortunately, I am a moron, so that didn't happen. I cut the PVC to be the exact length of each edge of the box that surrounds the logics. That means that the sides meet at corners, not complete edges. I should have consulted a kindergartener.

So, in my disgust, I decided to wire up my USB/Serial adaptor that arrived from Pololu.com today, and have some fun changing the message text on the front logics. Apparently R2 now thinks I am "great." For the moment, at least. :)



I tried and tried to get a couple of different USB/Serial adapter drivers to work with the Mac, but I never saw any relevant /dev/tty devices, so I gave up for now and resorted to using my PC laptop from work. Hopefully I'll get the Mac driver to work sooner or later.

*posted by Victor Franco at 10:42 PM* 0 COMMENTS

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SATURDAY, SEPTEMBER 09, 2006

## Recut Front Logic Harness PVC Side Pieces

I didn't get much done today due to errands and laziness.

I did manage to recut the PVC side pieces of the front logic harness to the proper size. I still need to cut some supports to support the bezels in the harness before I can glue the mess together.

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*posted by Victor Franco at 10:13 PM* 0 COMMENTS

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SUNDAY, SEPTEMBER 10, 2006

## Worked on Front Logic Harness, JB Welded Left Rear Coin Return, Tightened Up HPs

Today I glued together the PVC sides of the front logic harness with PVC glue.



I decided to give up on using silicone for my coin returns on the back door, and have chosen JB Weld instead. Hopefully this will secure the coin returns for good.





I also added a small piece of felt (using double-sided tape) to the inside of each holoprojector. The HPs were fitting a bit too loose for my taste.



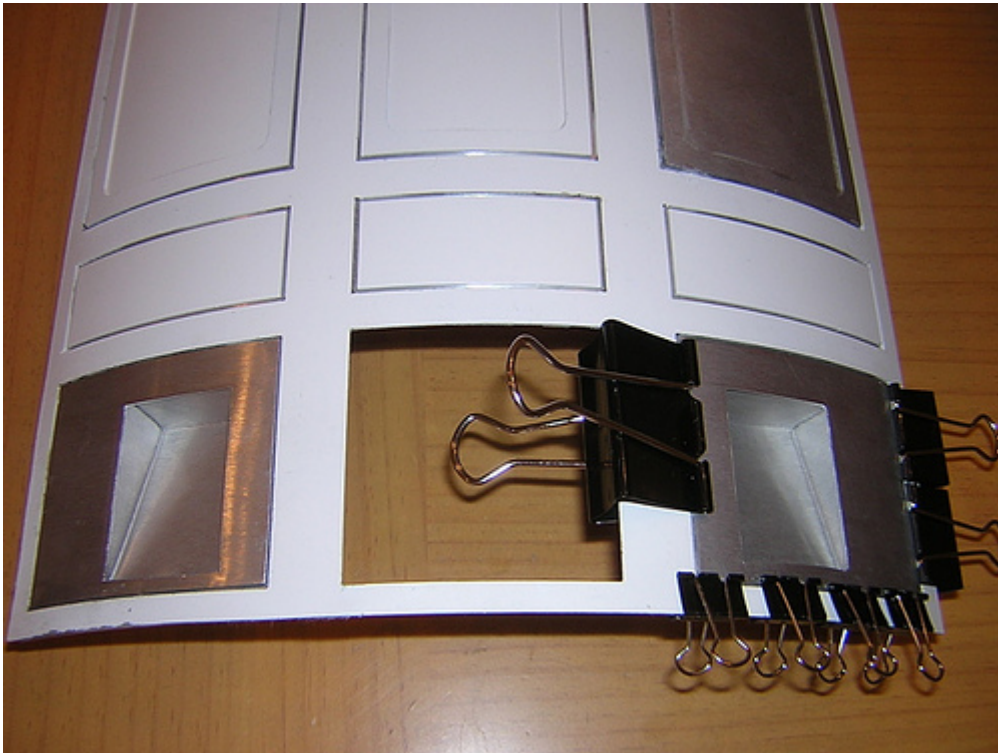
*posted by Victor Franco at 11:37 PM* 2 COMMENTS

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MONDAY, SEPTEMBER 11, 2006

## **JB Welded in Right Rear Coin Return**

Man, am I ever lazy. I had big plans to work on the front logics. Instead, all I managed to get done was JB Welding the right rear coin return into place. I better shape up!



*posted by Victor Franco at 11:52 PM* 0 COMMENTS

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TUESDAY, SEPTEMBER 12, 2006

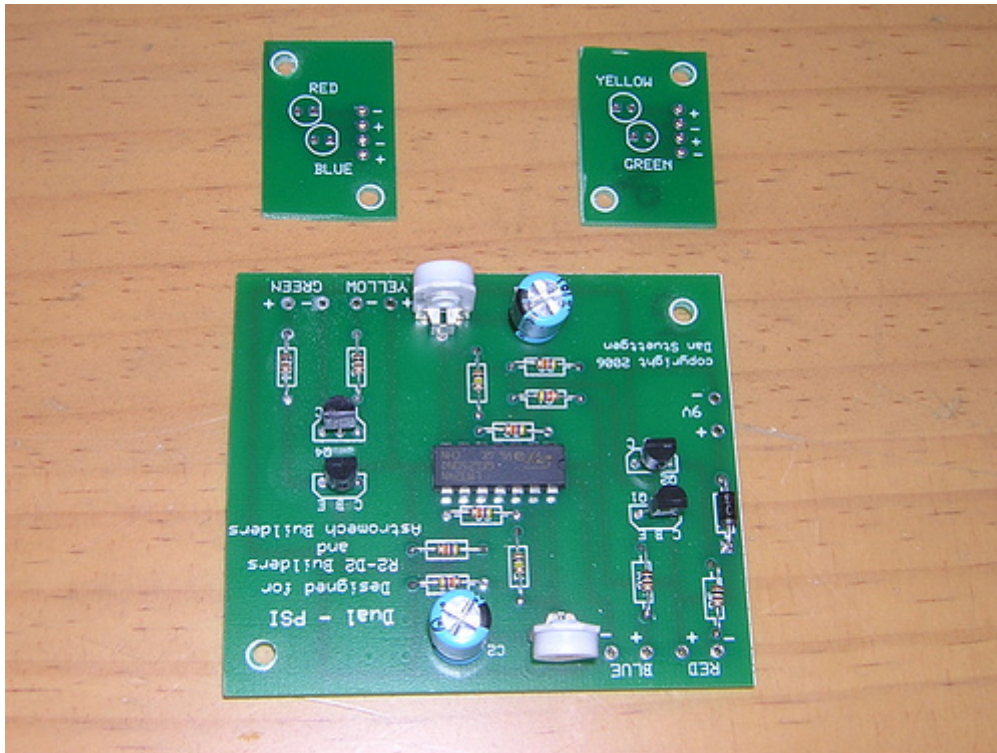
## **Reglued Dome Panel, Cut PSI Board, Worked on Dome Electronics**

I started the day by regluing with silicone the dome panel that surrounds the front logics. I had removed this panel earlier to do some light filing on it and the corresponding area on the inner dome. Once this is dry, I hope to work on securing the front logics in place.

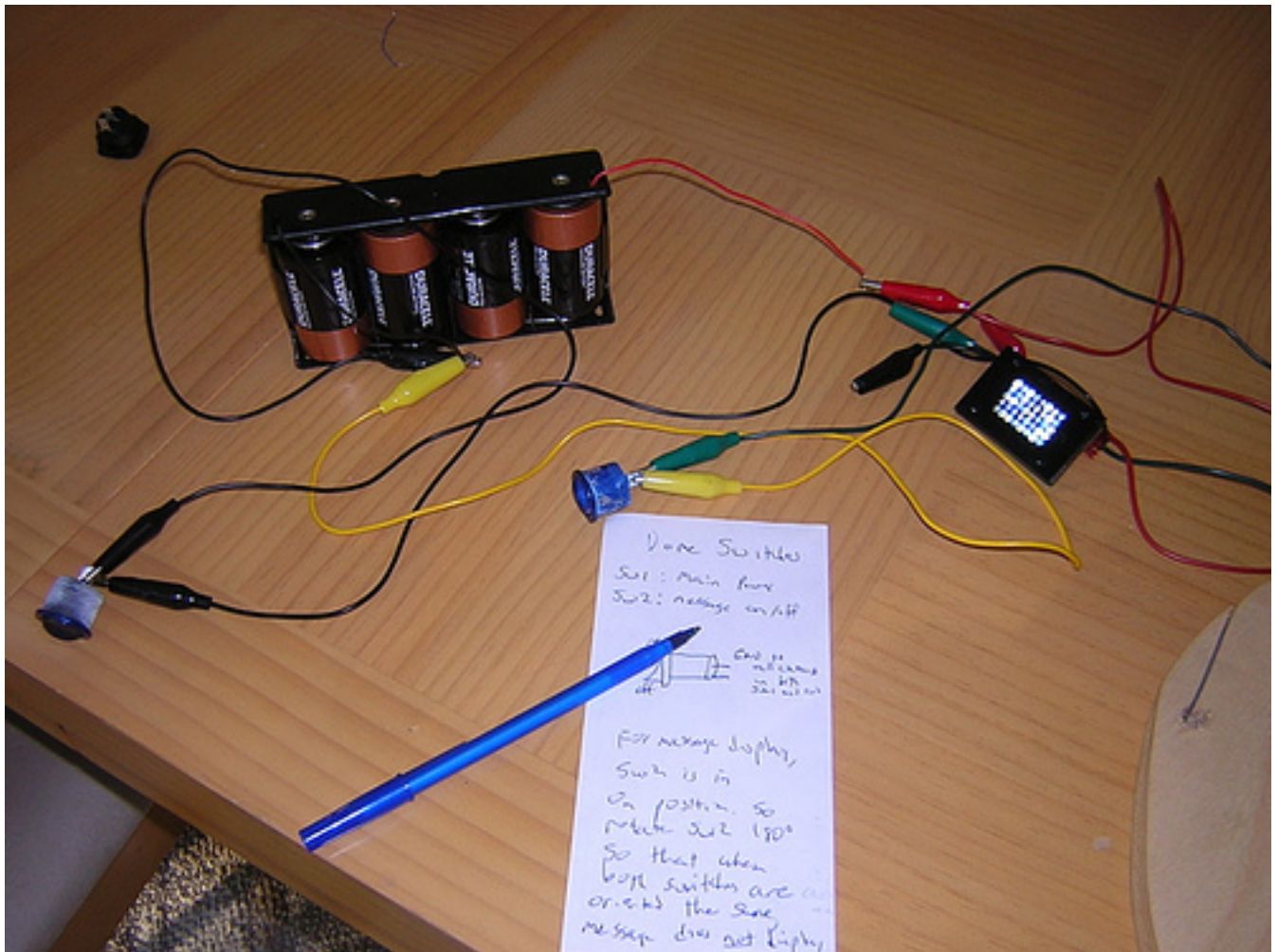




Next, I cut Dan's PSI board. The main board has two tiny daughter cards that are cut from it. These little daughter cards support the LEDs.



In the evening I worked on laying out the dome electronics. I drew up some plans and schematics, and switch operations. This part is taking longer than I thought it would. It didn't help that I had the Star Wars DVD playing in the background either.



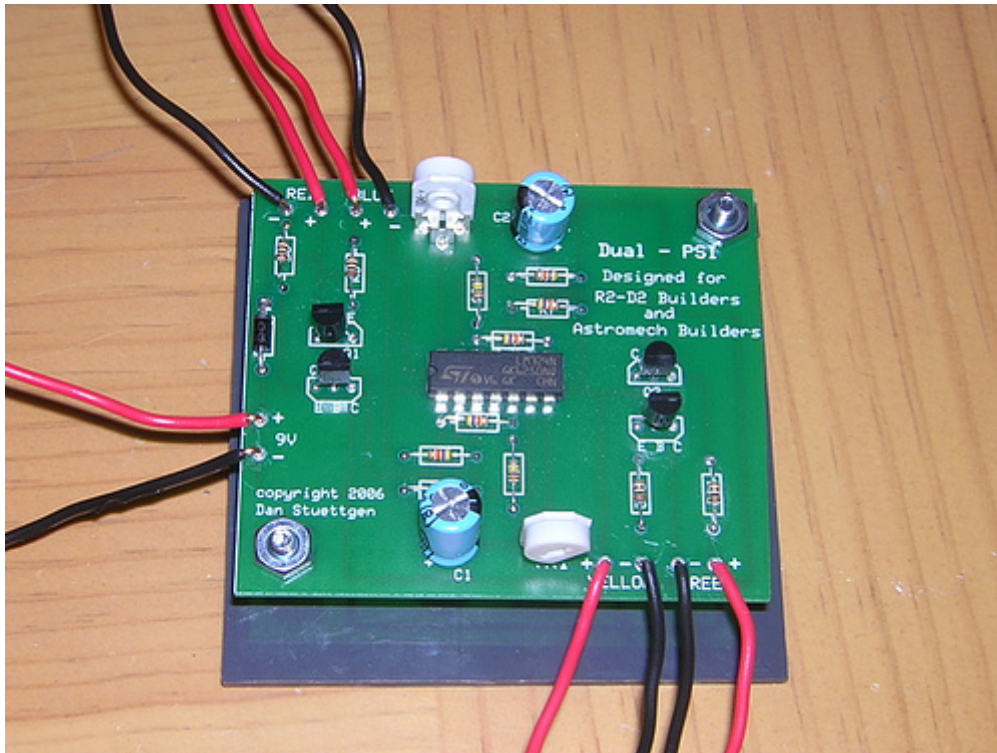
posted by Victor Franco at 11:49 PM 0 COMMENTS

WEDNESDAY, SEPTEMBER 13, 2006

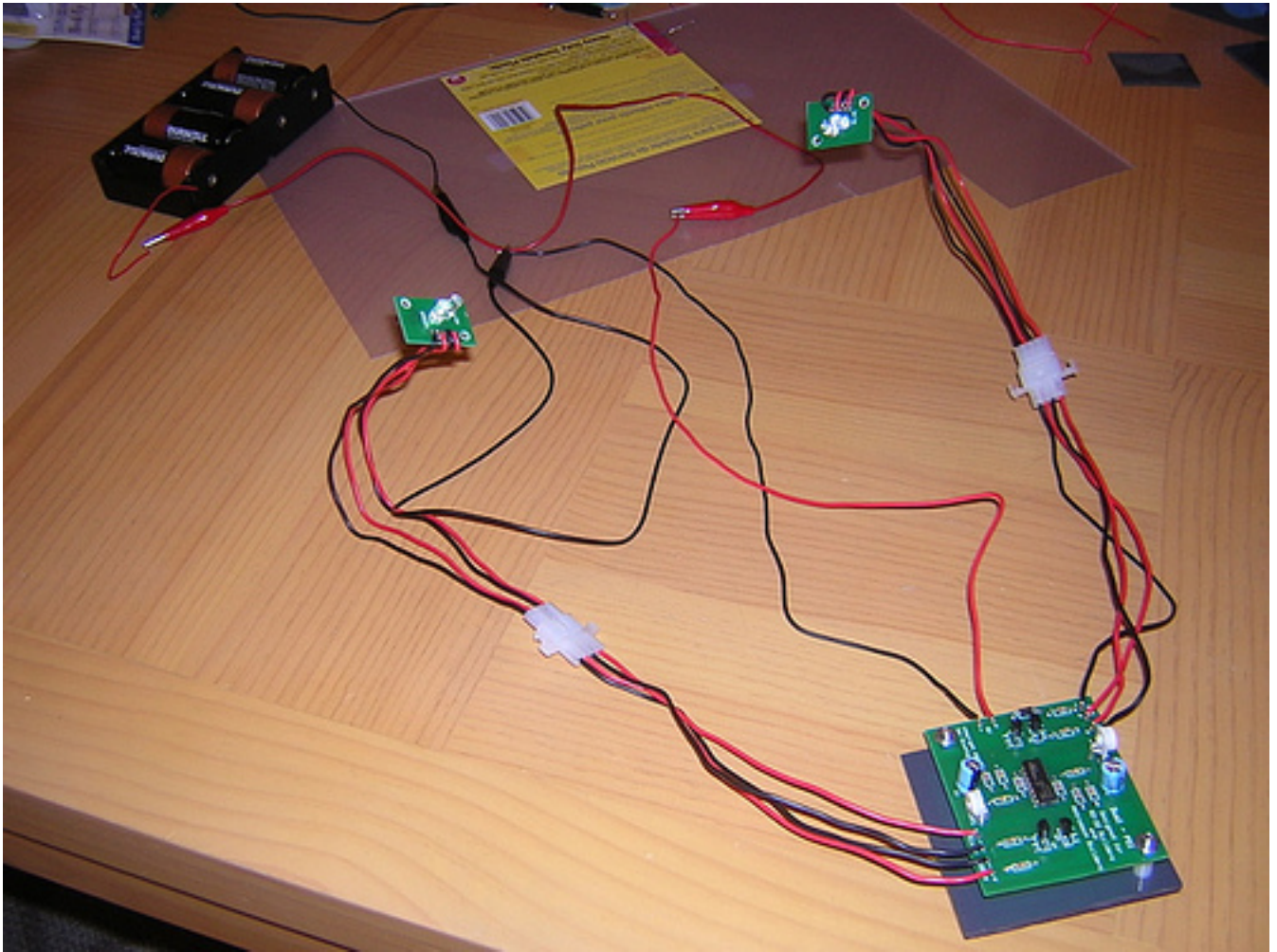
## Wired Up PSIs

Adventures in soldering. I managed to more or less wire up the front and rear PSIs. This involved 18 leads to solder (including the LED daughter cards), and I am *bad* at soldering.





I used connectors for the wires going out to the LEDs, so I can disconnect them without having to take everything apart. I think these are the most likely point of failure, as they are already acting flaky. Hopefully I won't have to abandon them.



*posted by Victor Franco at 11:58 PM* 0 COMMENTS

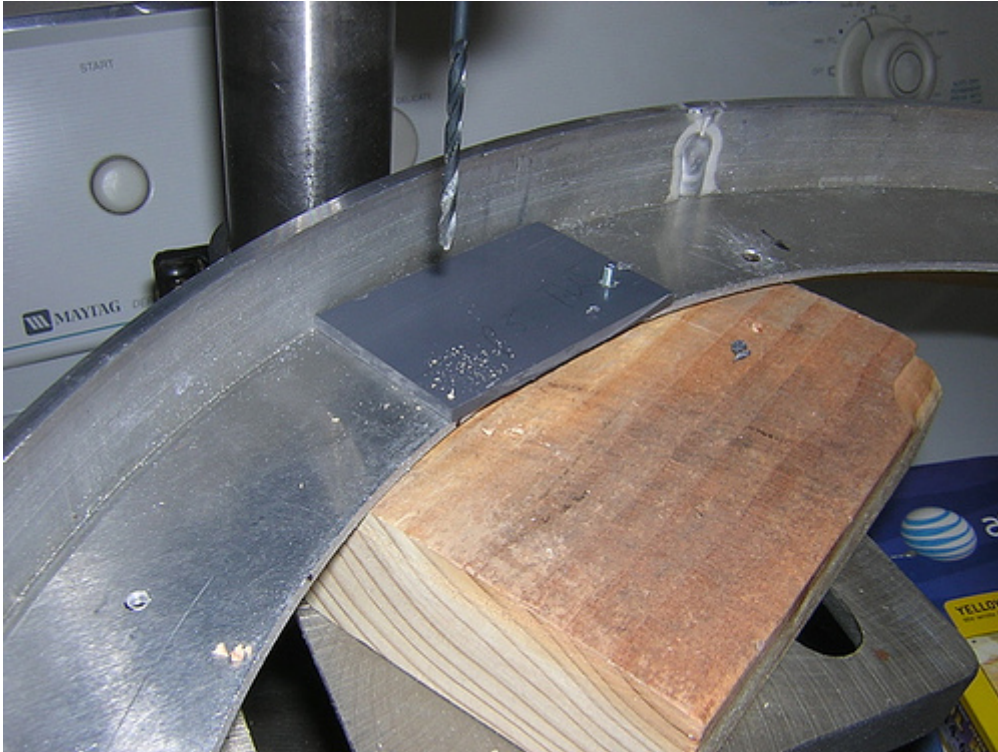
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THURSDAY, SEPTEMBER 14, 2006

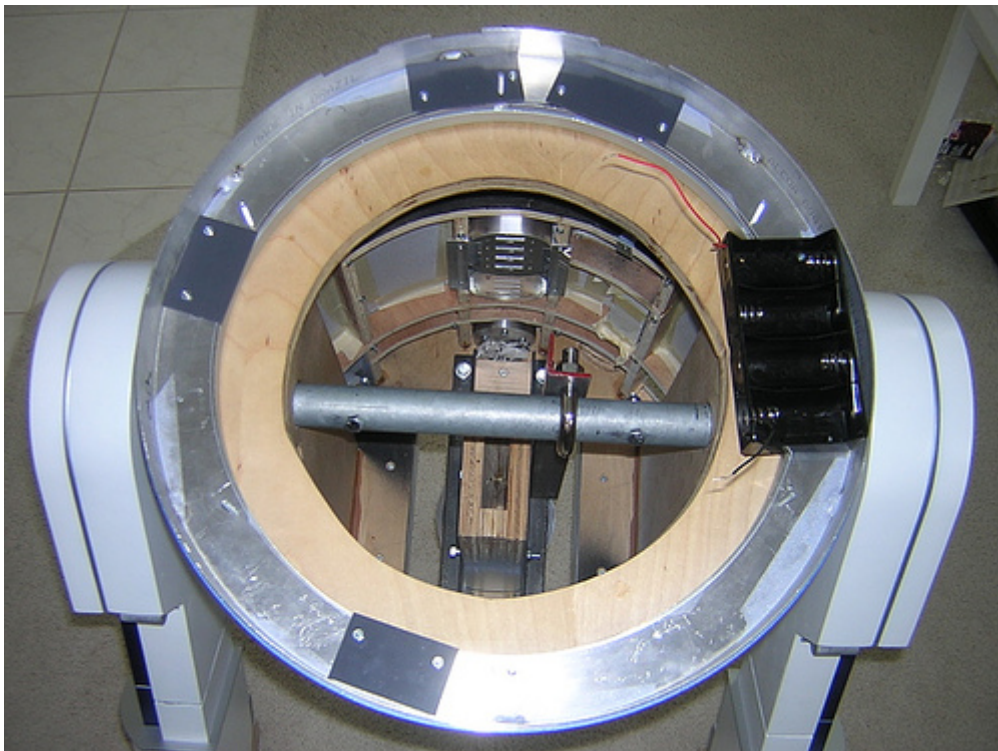
## Dome Ring Work

For the first time in a long time, I had the dome ring separated from the rest of the dome, in order to do some drilling for the PVC stands for the dome electronics.



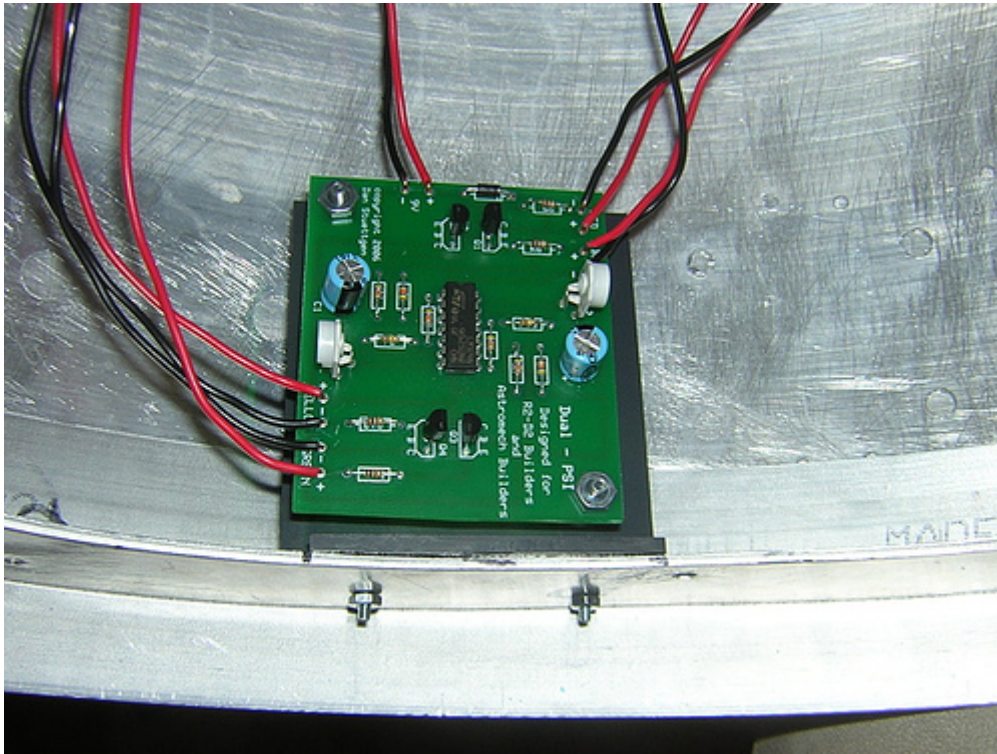


I drilled holes for both front and rear PSIs, the front and rear logics, the PSI board harness, and the battery pack. Currently, the PVC mounted onto the frame just represents the bases of the stands. The stands will be built up shortly to support their corresponding parts.





I finished building the mount for the PSI board, so I reattached the ring to the dome, and gave that a test fit.



I still have to build up the PSI stands and front logic harness, and solder the power bus together. My connectors from yesterday proved to be too flaky, so I will have to devise another strategy (think stranded wire and electrical tape...).

*posted by Victor Franco at 11:16 PM* 0 COMMENTS

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FRIDAY, SEPTEMBER 15, 2006

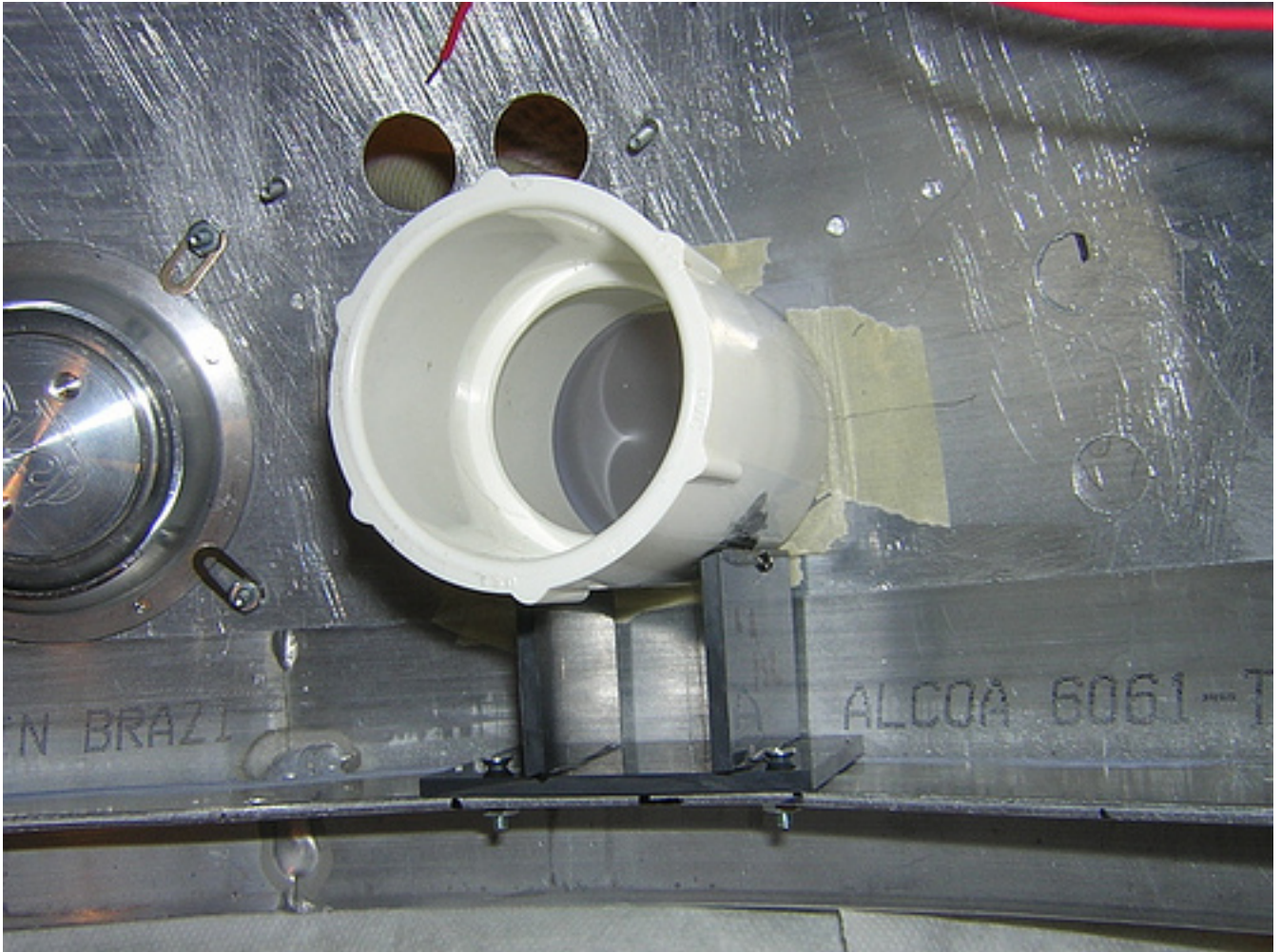
## Mounted PSI Housings, Cut Front Logic Wiring

I spent most of the day today getting the PSI housings mounted.

I cut small PVC stands, and sanded them to the profile of the PVC pipe they will support.

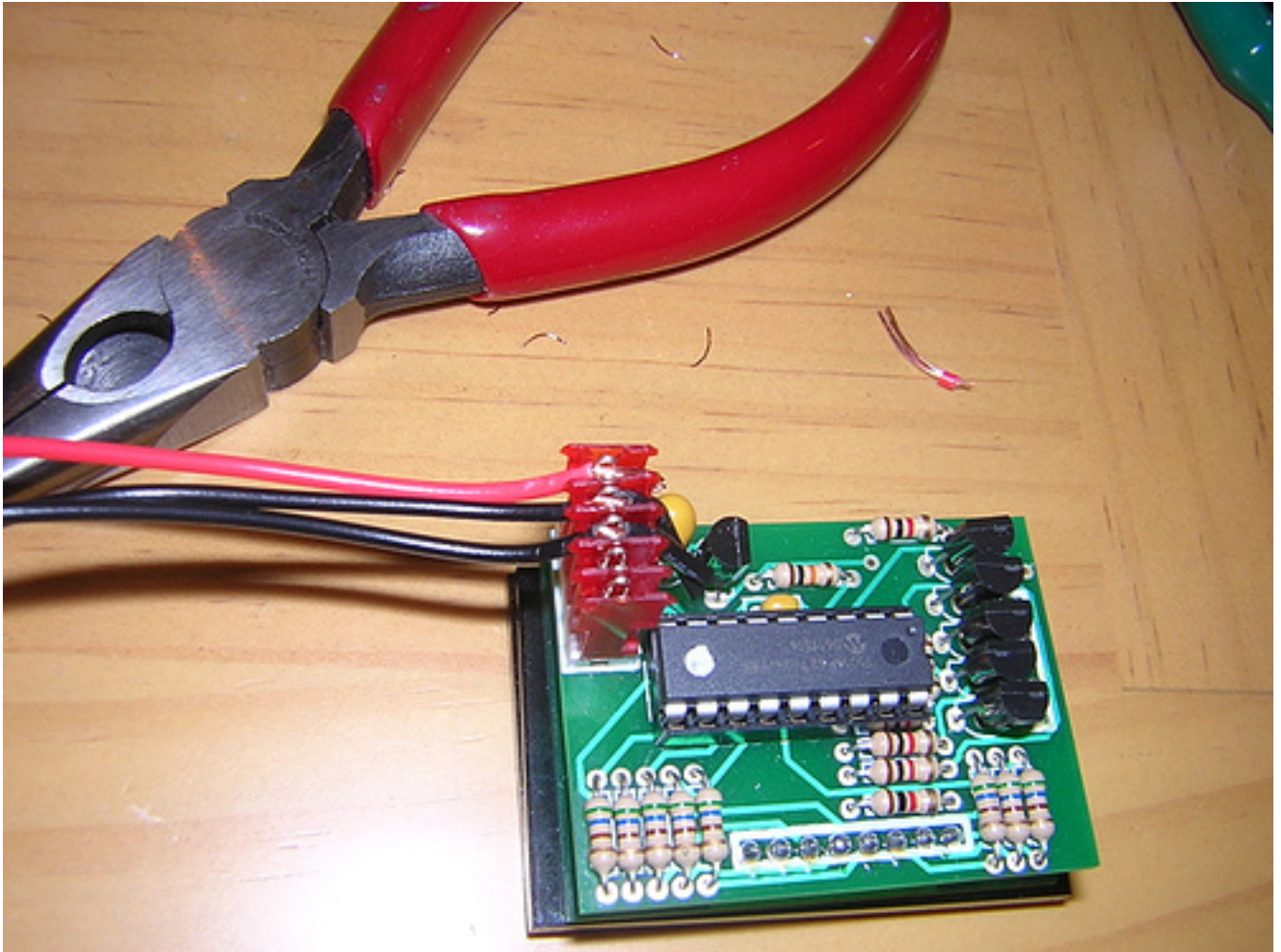


Then, iteratively fitting everything together, I used PVC glue to affix the stands to the housing base, and finally, the PVC pipe to the stands.



I also attached the permanent wiring for the front logics.





I gave up on silicone for now, it isn't drying for some reason. I had to resort to a dab of JB Weld to reattach the front logic outer panel on the dome. Oh well (yet again).

*posted by Victor Franco at 11:58 PM* 0 COMMENTS

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SATURDAY, SEPTEMBER 16, 2006

## More Dome Electronic Work

More of the same, with today's focus on the PSIs.

I bought some new connectors from Fry's today. These ones had wires already in them, so they are *much* more reliable. With them I'll be able to disconnect subsections of the dome electronics independently of the rest.

I got the yellow/green PSI connected, but I inadvertently snapped a solder joint on the PSI PCB for the red/blue PSI, so I need to fix that tomorrow.

In the saga of reattaching the front logic dome panel, believe it or not, the JB Weld did not hold the front logic panel in place on the dome, even after curing overnight. I can only attribute that to trace amounts of silicone or other contaminants on the surface of the dome and/or panel. So I sanded, cleaned with acetone, wiped down, and I am giving another go with silicone. This is an endless loop...

*posted by Victor Franco at 10:58 PM* 0 COMMENTS

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SUNDAY, SEPTEMBER 17, 2006

## Finished PSIs, Rats Nest Almost Done

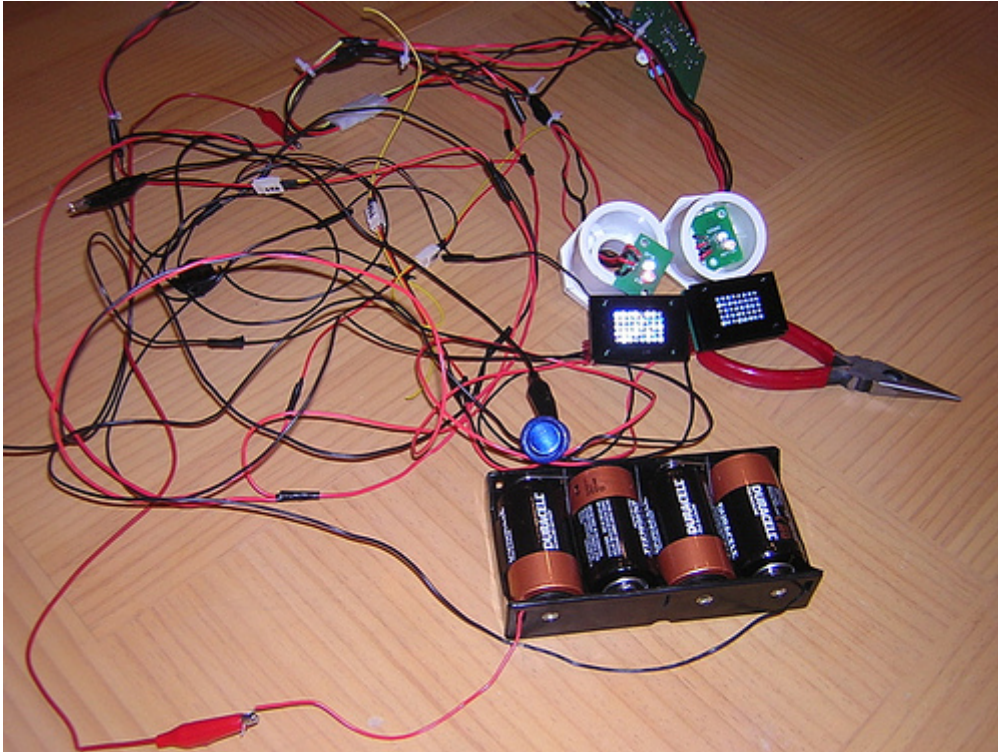
Today I was able to finish wiring up the PSIs. I gave them a test inside the dome.





I have quite a rats nest of wires that I'm creating, but amazingly, it all works (for the moment, at least). I just need to permanently hook up the dome switches and batteries.





I'm hopeful that the front logic panel piece will be secure by tomorrow and that I can start working on getting the bezels to fit into the dome.

*posted by Victor Franco at 11:36 PM* 0 COMMENTS

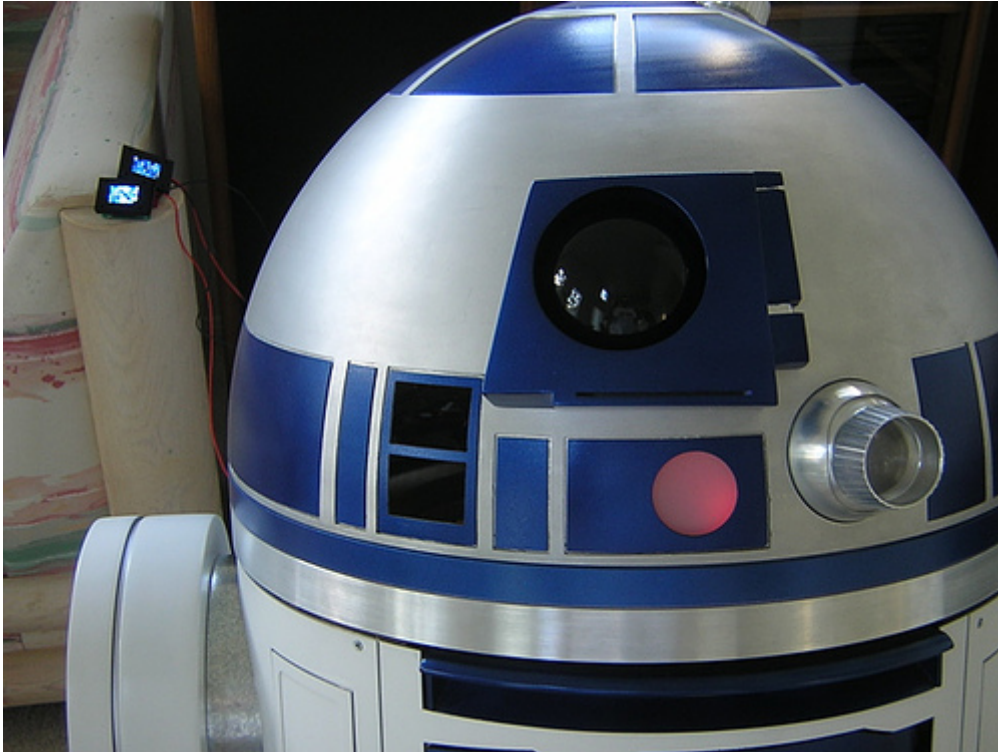
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MONDAY, SEPTEMBER 18, 2006

## Finished Wiring Up Switches, Batteries, Front Logics

Today I was able to get the rest of the dome electronics wired up. The whole mess is now self-contained in the dome.

I have the front logics pulled out for the moment, since I'm still waiting for silicone for the blue dome panel for the front logics to set completely. Everything is working, but I am a little concerned about the large number of connections I have in there. Each is a potential point of failure.



I am waiting on a planned run of rear logics, so those are still missing from the back of the dome.

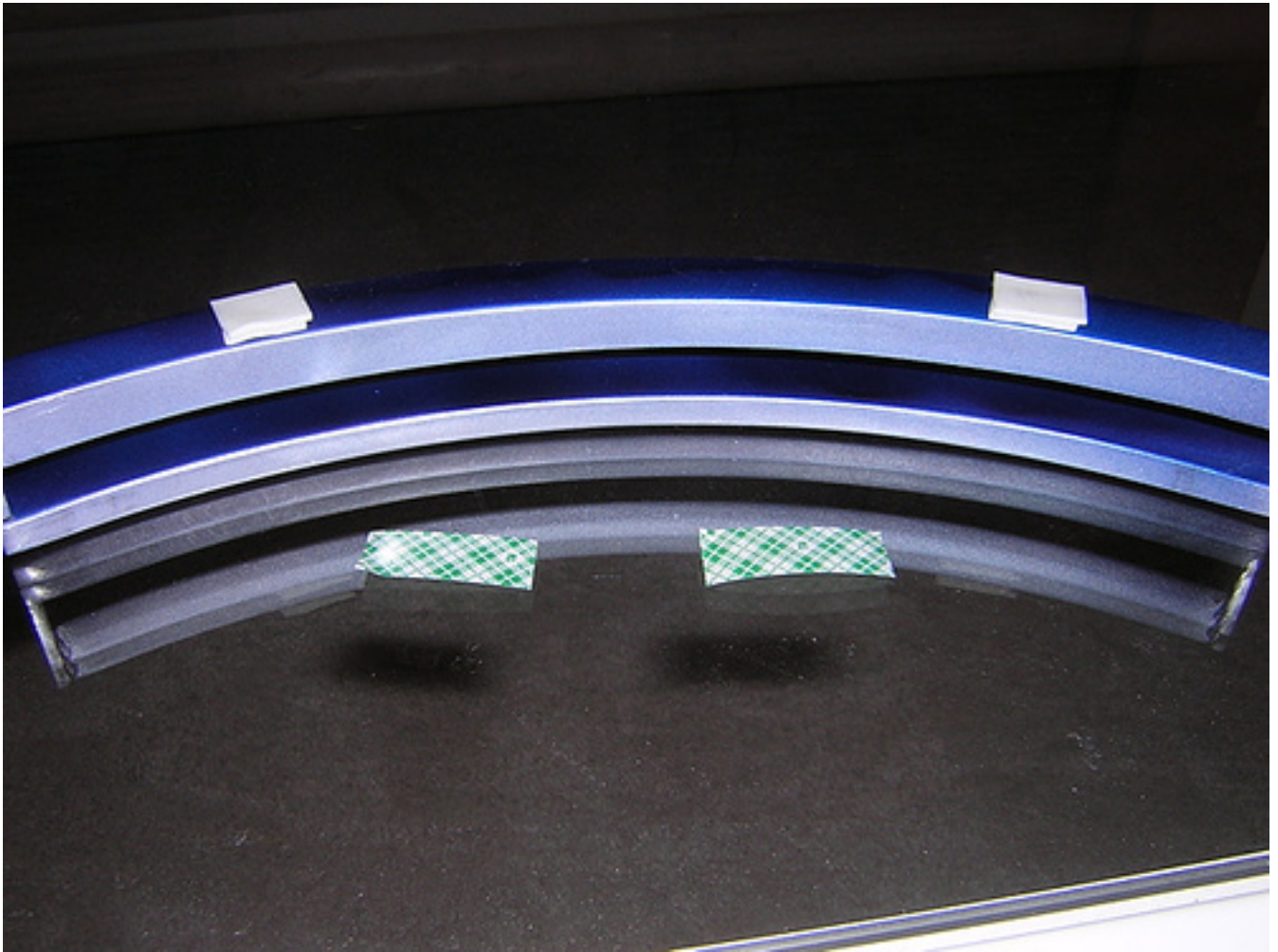
*posted by Victor Franco at 10:37 PM* 2 COMMENTS

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TUESDAY, SEPTEMBER 19, 2006

## Mounted LDP

Until now, the Large Data Port has been just sitting loose on the frame. Tonight I used some 3M foam tape (2 layers) affixed to the underside of the LDP, to (semi-)permanently mount the LDP into its slot in the skins and frame.



*posted by Victor Franco at 10:27 PM* 0 COMMENTS

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WEDNESDAY, SEPTEMBER 20, 2006

## **Temporarily Installed Front Logics**

I'm running out of time before R2LA IV to get the front logics installed. So, I cheated... I used strapping tape and taped them in from behind(!). Not very stable, although it's holding so far.





The rats nest of wires inside the dome is also an embarrassment, I need to tie those down somehow too.

This is probably my last update until R2LA IV on Saturday (to which I'll be running a little late), as I don't have much more I can get done before then.

*posted by Victor Franco at 11:22 PM* [4 COMMENTS](#)

## **R2LA IV!**

What a party! Where to start?

A ton of builders came to Mike Senna's, to celebrate R2LA IV.



Among other things, we had what we believe to be the world's largest Cantina Dance chorus line, with a dozen interactive R2s participating! You have to see the [video on YouTube](#).



There were a ton of droids in various stages of completion. Mine was somewhere amongst the throngs.







I was honored and humbled to win the "Michael J. Senna R2LA IV Droid Builder Award of Excellence 2006" trophy. Thank you Michael McMaster and Mike Senna!





And last but not least, Christie showed up, and posed with all our droids. Artoo will never wash his shoulder again.





Man, I can't *wait* until the next get together!  
*posted by Victor Franco at 1:48 AM* 0 COMMENTS

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SUNDAY, SEPTEMBER 24, 2006

## R2LA IV.1

The merriment continued into today, as some more building got done.

Rick Thames, who flew out for the event from Illinois (along with all his R2 belongings) made great progress on his speed controllers and drivetrain, with a big helping hand from Mike Senna, Michael McMaster, and William Miyamoto. Russell Rucker and I watched from a safe distance.



*posted by Victor Franco at 11:37 PM* 0 COMMENTS

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TUESDAY, SEPTEMBER 26, 2006

## Minor Repairs

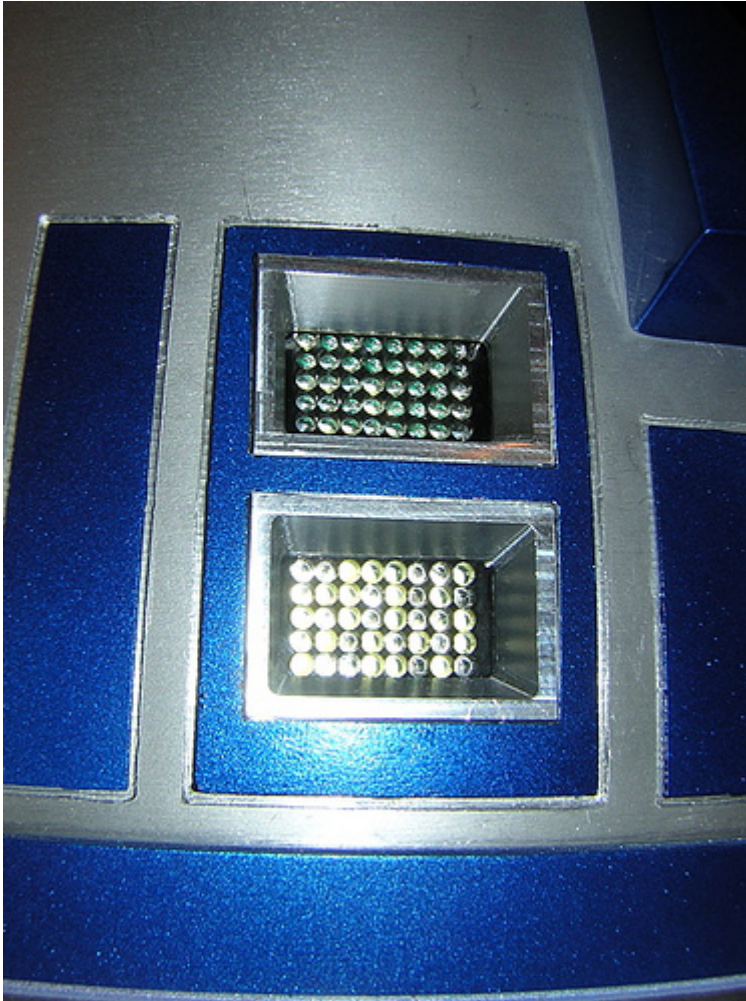
Today I worked on some minor repairs involving my most recent nemesis, silicone.

On the way to R2LA IV, I heard the distinctive "thump" of parts falling off my droid while en route to the event. Sure enough, two of the cylinder wedges had fallen off. I did a quickie re-silicone of those parts, and tonight the tape came off and they seem to be holding.

I still haven't been able to get the dome panel for the front logics to stick, but I'm trying again.







*posted by Victor Franco at 9:08 PM* [2 COMMENTS](#)

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THURSDAY, SEPTEMBER 28, 2006

## Started Thinking About Center Foot Shell

This really doesn't qualify as building, but while I'm waiting for my pocket vents and side vents to arrive, I'm thinking about the feet. I have the budget feet for the two outer feet, but I don't have anything for the center foot.

Vince Sanchez made his center foot from MDF, while Mike Senna made his from PVC. I'm leaning toward the PVC, since the center foot is prone to taking a beating. The center foot will lead, and is the most likely part to run into things (or have things run into it), and I think the MDF might dent or break. I printed the blueprints and am studying how to approach this build.

I hope those vents show up soon so I can put this on the back burner again! :)

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*posted by Victor Franco at 6:58 PM* 0 COMMENTS

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SATURDAY, SEPTEMBER 30, 2006

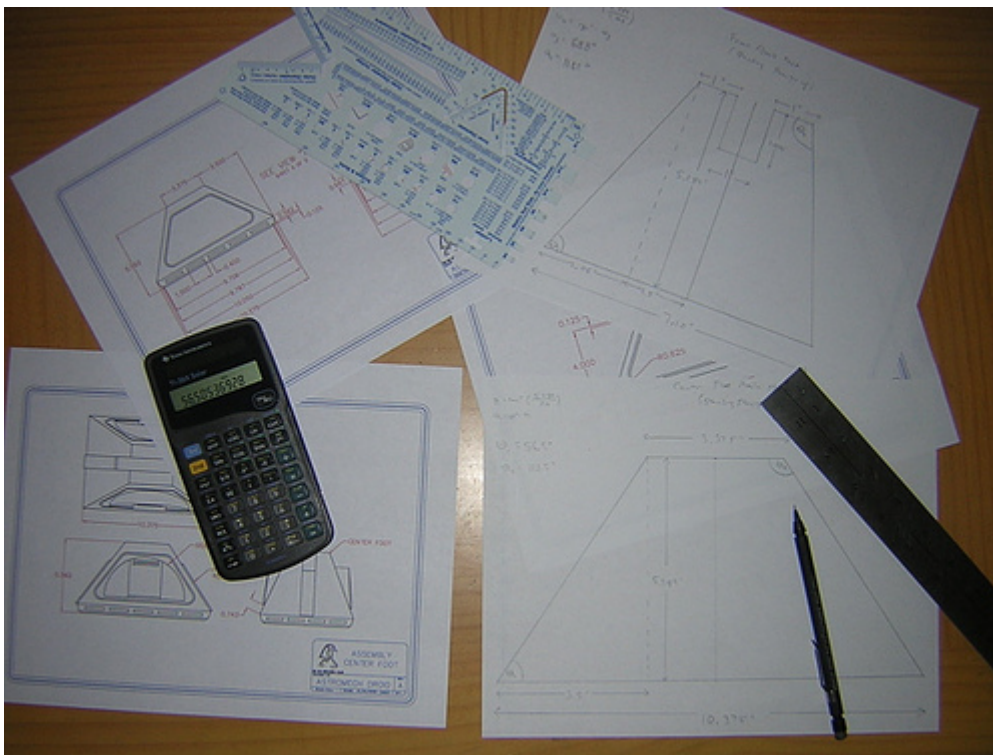
## Fun with Arctangent

Still not much is getting done over here.

I continue to plan and draw out various faces and angles for the PVC center foot shells. Luckily, I can remember some basic trigonometry, as I've had to rely on it several times throughout this project.

This time around, I'm calculating angles of adjoining edges, whose lengths are known. Arctangent (and my scientific calculator) to the rescue!

Due to other commitments, I probably won't have anything new to report until Tuesday at the earliest. :(



*posted by Victor Franco at 6:07 PM* 0 COMMENTS

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TUESDAY, OCTOBER 03, 2006

## Still More Center Foot Planning

Sorry to say, I still have little to show for myself.

I continue to go over the blueprints and calculate edge angles. I am struggling to calculate the true height for the edge that has the "dashed lines" in it. The latest blueprints show a 2-D projection of a tilted surface, so it is difficult to determine the actual height of this section of the foot shell when standing straight up, even with all the trigonometry I've been using. It seems like there's not quite enough information to go on. I'll keep studying this.

The other problem is, with the fall season in full swing, there's not much daylight to cut material after work. Actual building may have to wait until the weekend. :/

*posted by Victor Franco at 11:12 PM* 0 COMMENTS

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WEDNESDAY, OCTOBER 04, 2006

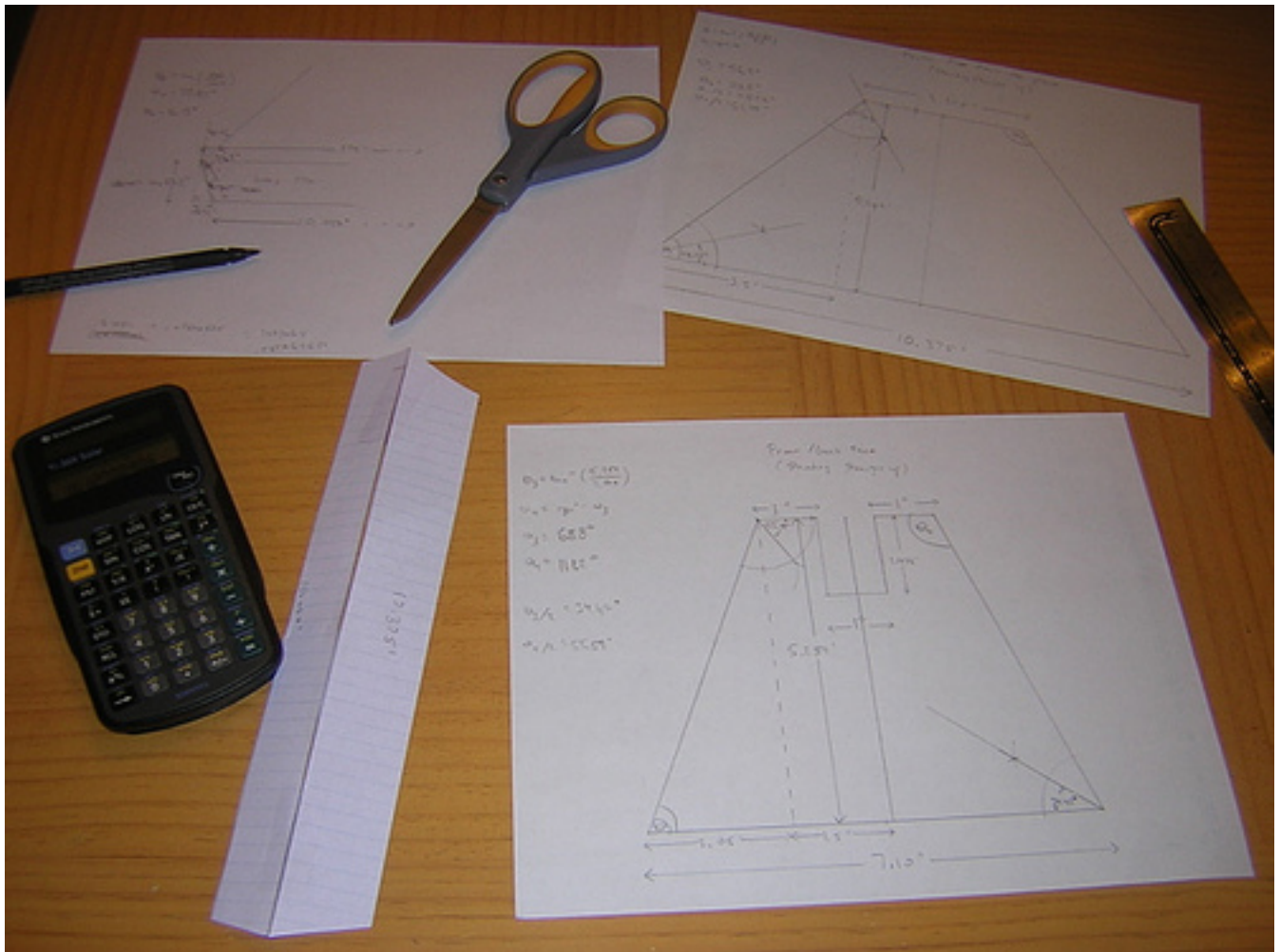
## LDP Arrives, Fun with Origami

Wayne's excellent, one-piece Large Data Port arrived today. Sure, I already have one in my droid, but you can never have too many LDPs, right?





I *think* I'm finally over the hump with the angle calculations for the center foot shell. I broke down and built a partial paper model to visualize the edge I had been struggling with. I realize paper does not simulate material thickness, but I mainly wanted to determine the length of the diagonal edge of where two sides meet, and I did.



Thank you to Alan Wolfson and pixelFiend for input on their approaches toward the foot shell build.

With that behind me, I'm hoping I can start cutting the foot shells this weekend.

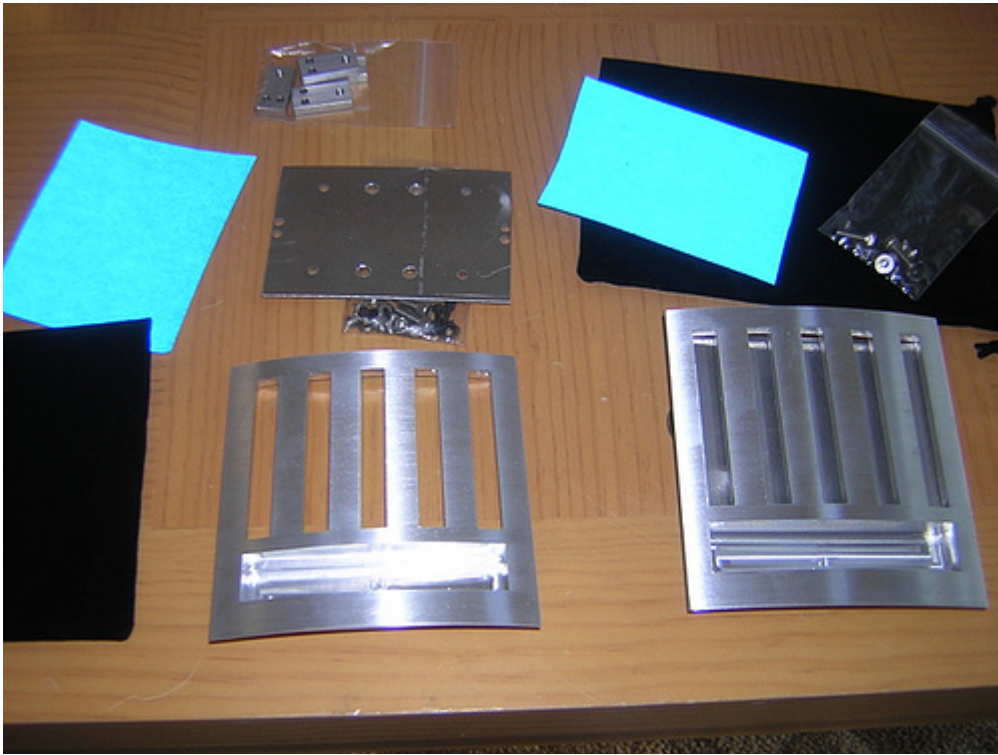
(How many pictures of pencil, paper and calculator can I post and still look like I'm getting something done?)

*posted by Victor Franco at 10:19 PM* 2 COMMENTS

THURSDAY, OCTOBER 05, 2006

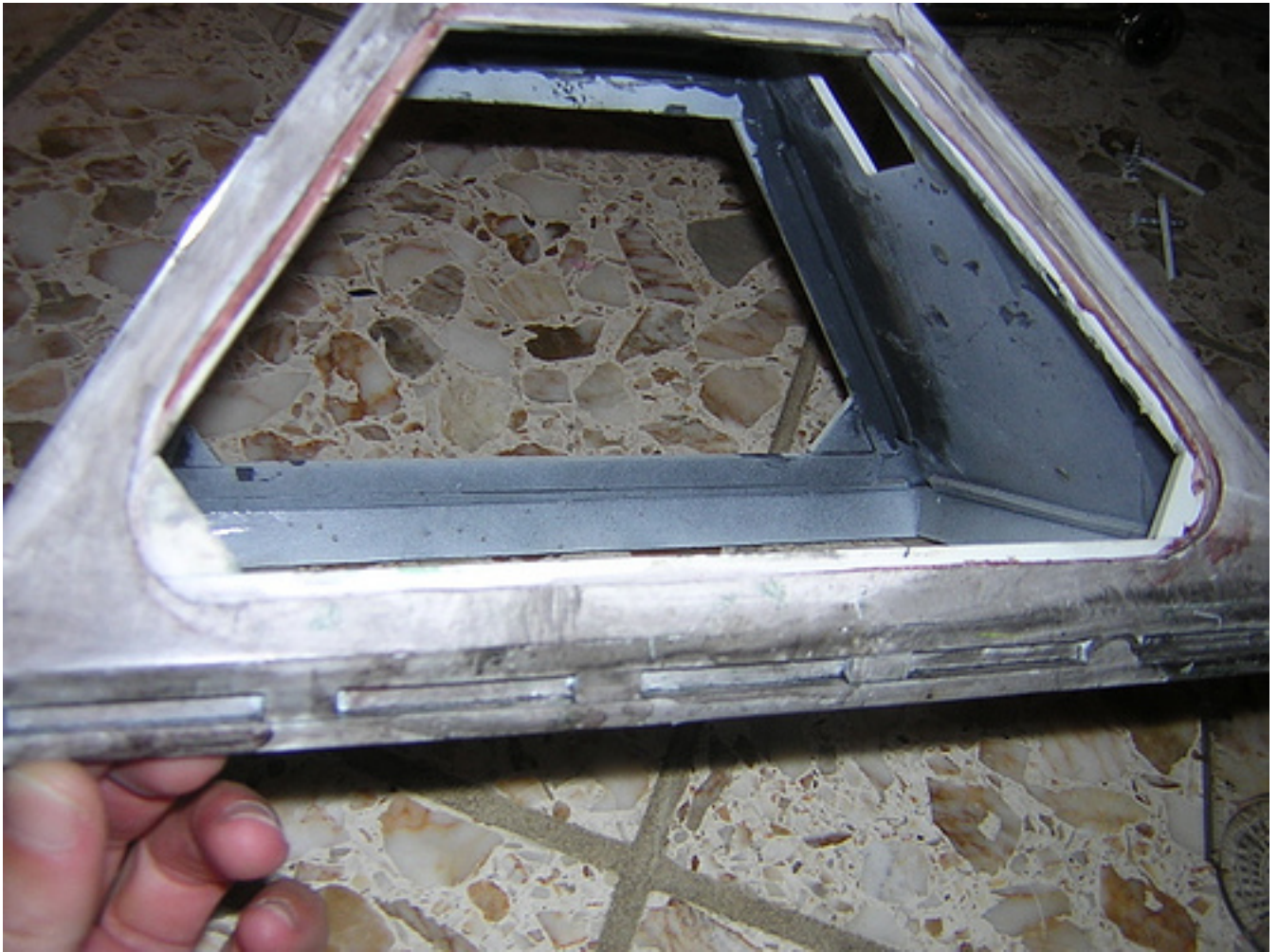
## Pocket Vents Arrive, Talked Feet with Mike

Daniel Deutsch's pocket vents arrived today. They look great! They came in nice velvet bags, and even had a large blue sticker for the back plate, for the truly lazy among us. I will be painting mine with the usual blue formula, maybe as soon as this weekend.



Later on I went to Mike's, to review my center foot shell calculations and measurements. Good thing I did, as we caught an error on one of the lengths on my drawings. Mike also dug up his old drawings, and we were able to see more angles, such as the bevel cuts in the edges where various sides meet. He even removed his center foot shell so we could take a good look at it. Thanks yet again Mike!





*posted by Victor Franco at 11:02 PM* [0 COMMENTS](#)

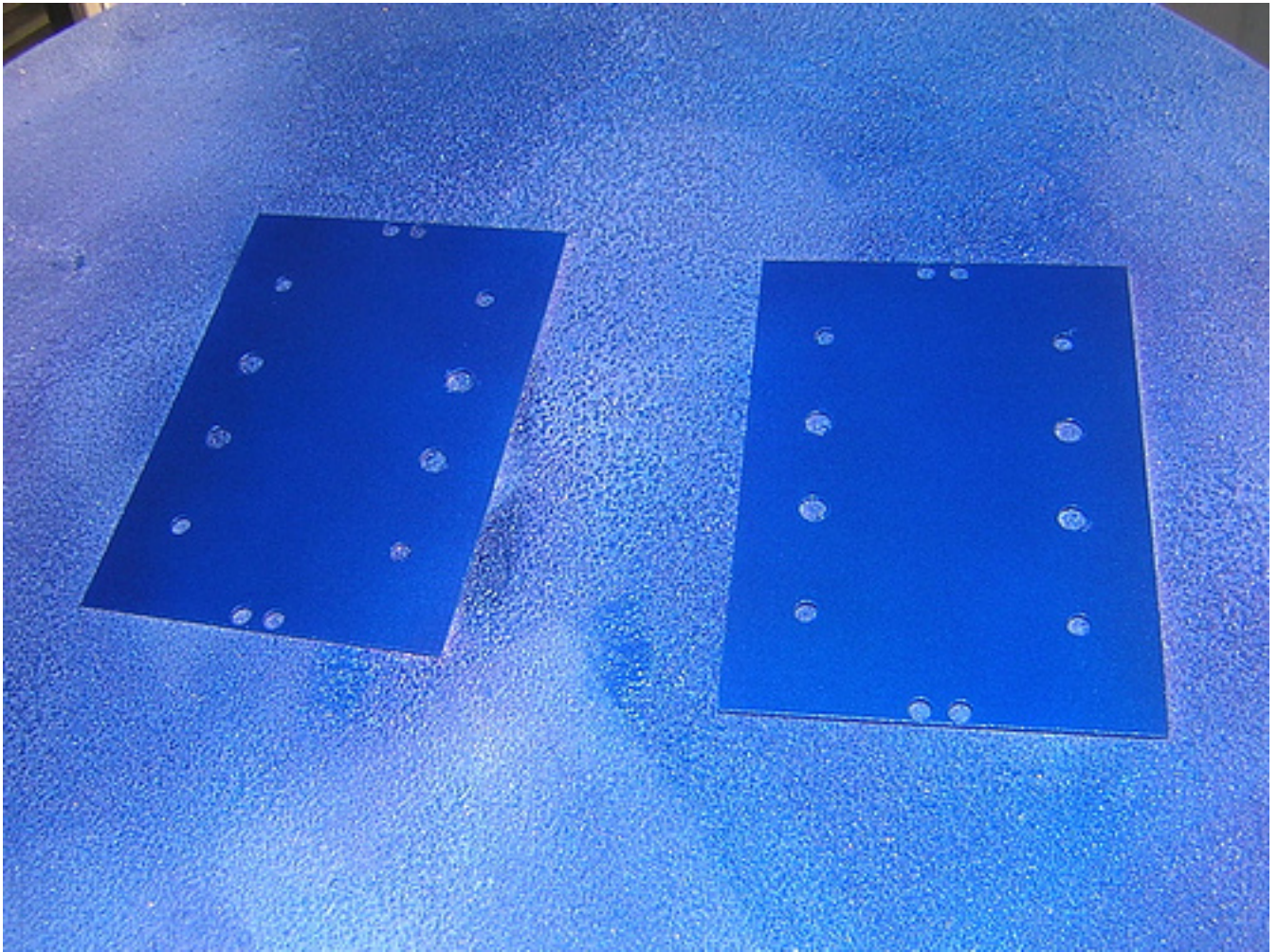
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SATURDAY, OCTOBER 07, 2006

## **Painted Pocket Vent Back Plates**

I had big plans to start cutting the center foot shell today. That was before I went to bed at 4:00am this morning, and spent a good part of the day uploading pictures and documenting my experience from last night's event.

I did manage to paint the backing plates for the pocket vents, so at least I got something done. I hope to start on the foot shells tomorrow.



*posted by Victor Franco at 11:15 PM* 0 COMMENTS

## Rubbing Elbows

Once again, this isn't exactly R2 building, but it relates to it.

I had an interesting night last night.

I'll try to keep a reaallly long story short(er). Mike Senna was asked to have his R2 appear on stage last night, at the Shrine Auditorium for the Jules Verne Adventures Awards. I was lucky enough to have Mike invite me along. They were honoring George Lucas, Harrison Ford and Jane Goodall. That meant being backstage at the curtain for R2's appearance.

But first things first. Here's a rough timeline of the evening:

3:00pm-3:30pm: Mike arrived for rehearsals with stand-ins

5:00pm: I arrived

7:00pm: Red carpet arrivals

8:00pm: Scheduled start of show

10:00pm: Scheduled end of show, start of VIP party

The folks at the box office weren't all that helpful when I got there ("we don't have your name here"), so I called Mike and Amy and they got me in.

Mike asked if I wanted to be in the audience during the show, or backstage with him, where R2 would be waiting to go on, along with the honorees and celebrities. Ummm... backstage, please.

Mike had a magical yellow backstage pass, but I sure didn't. Still, Mike lead the way backstage (and on the stage itself since it was still early), to where R2 was. Later, we were able to secure extra backstage passes, and I was relieved that I wouldn't get the boot. Just that was cool enough, but it gets better.

When we went back outside around 7:00pm, celebrities started arriving on the red carpet, including: Malcolm McDowell (MC of the show), Ray Harryhausen (who made the original black-and-white King Kong, and many other famous movies), Walter Koenig (Chekhov from the original Star Trek), James Cameron (director of Titanic and other blockbusters), Jane Goodall (lifetime of research of chimpanzees), Harrison Ford with Calista Flockhart, and ... George Lucas. There were a bunch of other celebrities that I did not recognize, some from the more contemporary Star Trek TV shows. About a dozen members of the local 501st were there, and got pictures with George.





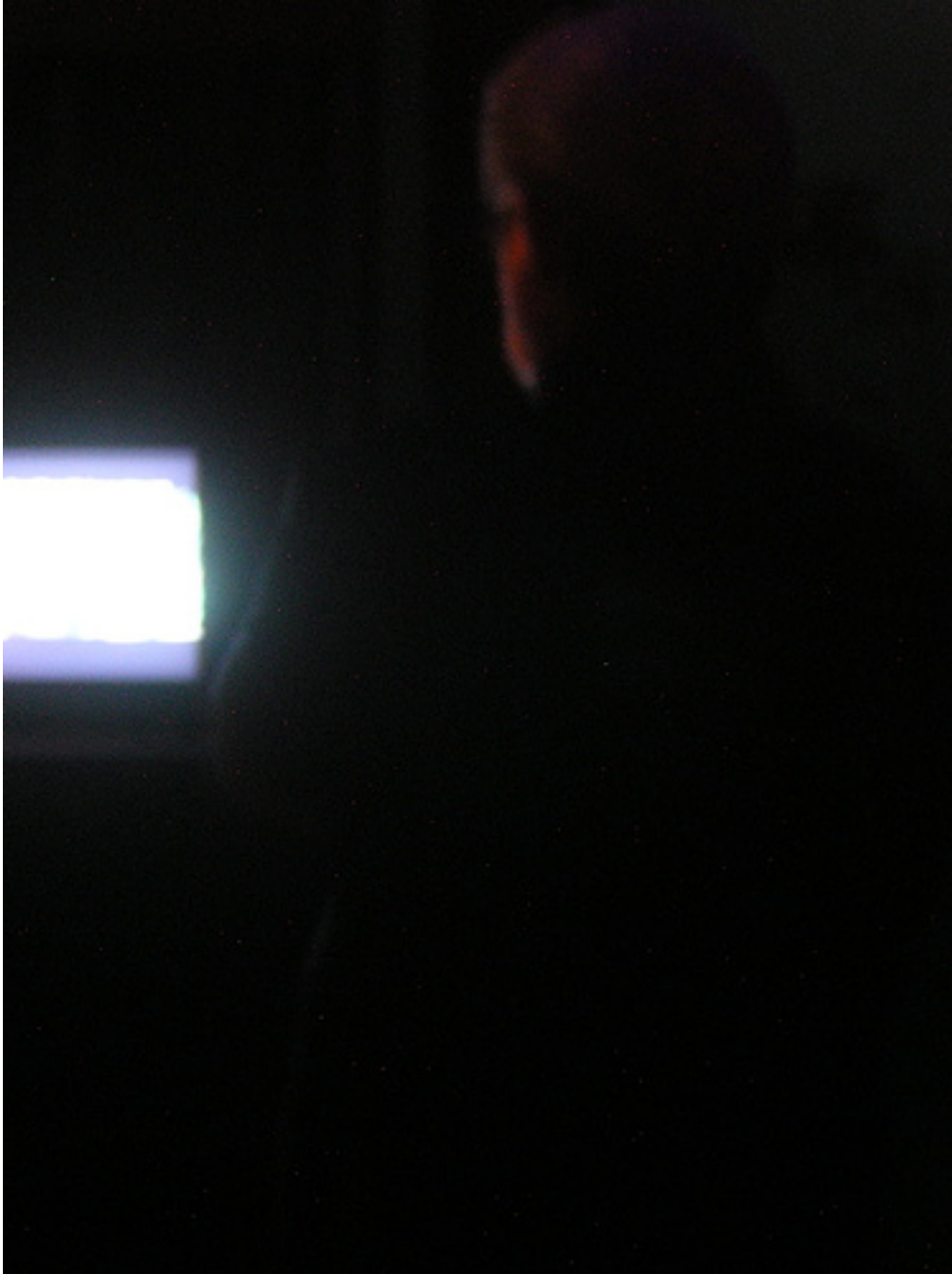
After the red carpet, we went to the green room and dressing room areas, where Mike met up with Malcolm McDowell to go over their routine for the show: After Harrison Ford received his award, R2 was to interrupt Malcolm on stage, bump into him lightly, they'd exchange "words," and then R2 would continue driving off stage (stage right, we were stationed behind the curtain at stage left). More on that in a moment (I'll tell you now it went fine, no horror stories to tell).

The show started somewhat late. We took up our position back stage (along with a few of the 501st crew), right behind the curtain. It was very dark, and there was a wall of sound equipment next to us, with fans that pretty much drowned out anything being said on stage.

The first to go on was Ray Harryhausen. The "unveiling of Kong scene" in Harryhausen's King Kong was filmed in the very auditorium we were standing. As a special surprise, with Ray on stage, they revealed a prop I was told is now owned by a private collector: The original skeletal armature of the miniature King Kong model. I don't know how often Mr. Harryhausen gets to see it, but it was a special moment. Later, Mike got a picture of himself, Ray and the prop.

Next to go on stage was George. Before each person went on, they played a 5 minute clip highlighting career work. So George was standing not five feet in front of me backstage, watching an HDTV with a few of us behind the curtain that let us see what the audience was seeing projected on the main screen. We could actually take pictures back there, provided there was NO flash photography. That meant I got virtually NO good pictures back there. Still, it was worth it.

You'll have to take my word for it, that's George (from the back) to the right of the TV.



George went on, spoke for a few minutes (what he said, we couldn't hear), and then invited James Cameron to come up from the audience to join him. James said a few words, and they exited stage right.

Next up, Harrison Ford. Harrison took up his position backstage, watched the TV as they showed his clip, and then went out and gave his talk. Mike's turn was coming up.

As Harrison was wrapping up, Mike started powering up the dome and test



driving a couple of inches to make sure all systems were "go." They were.



Mike drove R2 out from behind the curtain perfectly. R2 interrupted Malcolm with his beeps and boops, and on cue, nudged Malcolm. Malcolm ad-libbed something funny that we couldn't hear, and R2 drove off stage right. Perfect. We were done, we were psyched.

At this point we could walk around the back of the stage, which had a curtain in back that we could walk behind, and go back to the green room and dressing room areas. Mike went to retrieve R2 on the other side of the stage, while I made a few trips back and forth behind the curtain to gather the dolly and a few boxes Mike had brought.

Once at the green room, we hung out just outside the door, hoping for the best. Pictures? Autographs? Who knows. As the opportunity arose, pictures were taken.







Mike had been dying to get Harrison to sign R2's back door, where almost all the main actors from the original trilogy (and many from the new trilogy) had signed. When Harrison came out of the green room, Mike asked for a quick picture with him, Amy and R2, followed by the signature on the panel. He got both!







After the show was over, Mike and Amy were supposed to be invited to the VIP party. No such guarantees for the rest of us. But, we all went up and crossed our fingers. When we got there, we were met by burly security guards, who informed us we were not on "the list." Mike and Amy were assured by the folks running the show they'd be in. They got stabbed in the back.

When the folks in charge were finally contacted, they first said no one gets in. Later they said only Mike could go in with R2, but not Amy. Mike said if Amy doesn't go in, R2 doesn't go in. They didn't go in.

Much later, they finally let Mike and Amy in with R2. Mike and I were in occasional radio contact, and I was chatting with the guards (I wasn't mad at them, they were doing their job).

Well, much, much later, after almost everyone had left, they finally let a few more of us in. So I finally managed to get a picture with the only person remaining that I recognized, James Cameron.



By the time we left, it was 2:00am. After an hour drive home, I had to post at least one picture to the board, so I hit the hay close to 4:00am. It was a long day, but one that will be unforgettable. Thanks, Mike, for the opportunity I would never have had otherwise. I'm looking forward to Celebration 4!

*posted by Victor Franco at 5:20 PM* [0 COMMENTS](#)

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SUNDAY, OCTOBER 08, 2006

## Pocket Vent Work

I know, I know. I'm supposed to be working on the PVC center foot shell. But I don't feel like I'm ready yet, I need to really understand how all the angles meet up and why. The visit to Mike's on Thursday was a big help, but I need to work through all this myself and understand why things connect the way they do. That, plus I didn't realize I have hardly any PVC left, I need to order more in order to finish the foot shells. D'oh!

So in the meantime, I worked on fitting the pocket vents into the body. I had



hoped that I had Dremeled out enough material on the frame [back on August 29](#) to fit the pocket vents within the body, but when the time came, that turned out not to be the case. Time to break out the Dremel again, and make more space.



Much better. As usual, I gave them a loose fit. I plan to secure them with silicone later. For now, I have the back plate taped on. I will screw it down at the end of the week when the paint has had plenty of time to completely dry. The back plate actually bends along the pocket vent curve, and I don't want to mess with the paint job by bending the plate until I think it's ready.



Mike recommended foil tape to cover the machining marks in the pocket, so I'll probably work on that tomorrow.

*posted by Victor Franco at 10:04 PM* 0 COMMENTS

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MONDAY, OCTOBER 09, 2006

## Foil Tape for Pocket Vents

Tonight I cut some 3.5" x 11/16" strips of foil tape to hide the machining markings at the back of the pocket vents. It took me a few tries to get the strips of tape the right size, and with as few wrinkles as possible. Again, I could have used a kindergartener's help cutting along the lines. I lightly sanded the foil tape with 400 grit sandpaper, to better match the look of the aluminum vents.



Although I wasn't able to get the tape to lay down 100% wrinkle-free, I prefer this look over the machine marks that were visible in yesterday's photo. (I wonder if I could have safely sanded those marks out, without marring other surfaces? Oh well, it's moot now.)







*posted by Victor Franco at 10:13 PM* [1 COMMENTS](#)

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WEDNESDAY, OCTOBER 11, 2006

## **PVC Arrived**

My foot shell PVC arrived today from McMaster-Carr (part #8747K146). Four sheets of 24"x24"x1/8" gray PVC. I intentionally ordered way more than I need, for any future endeavors.

*posted by Victor Franco at 8:40 PM* [2 COMMENTS](#)

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FRIDAY, OCTOBER 13, 2006

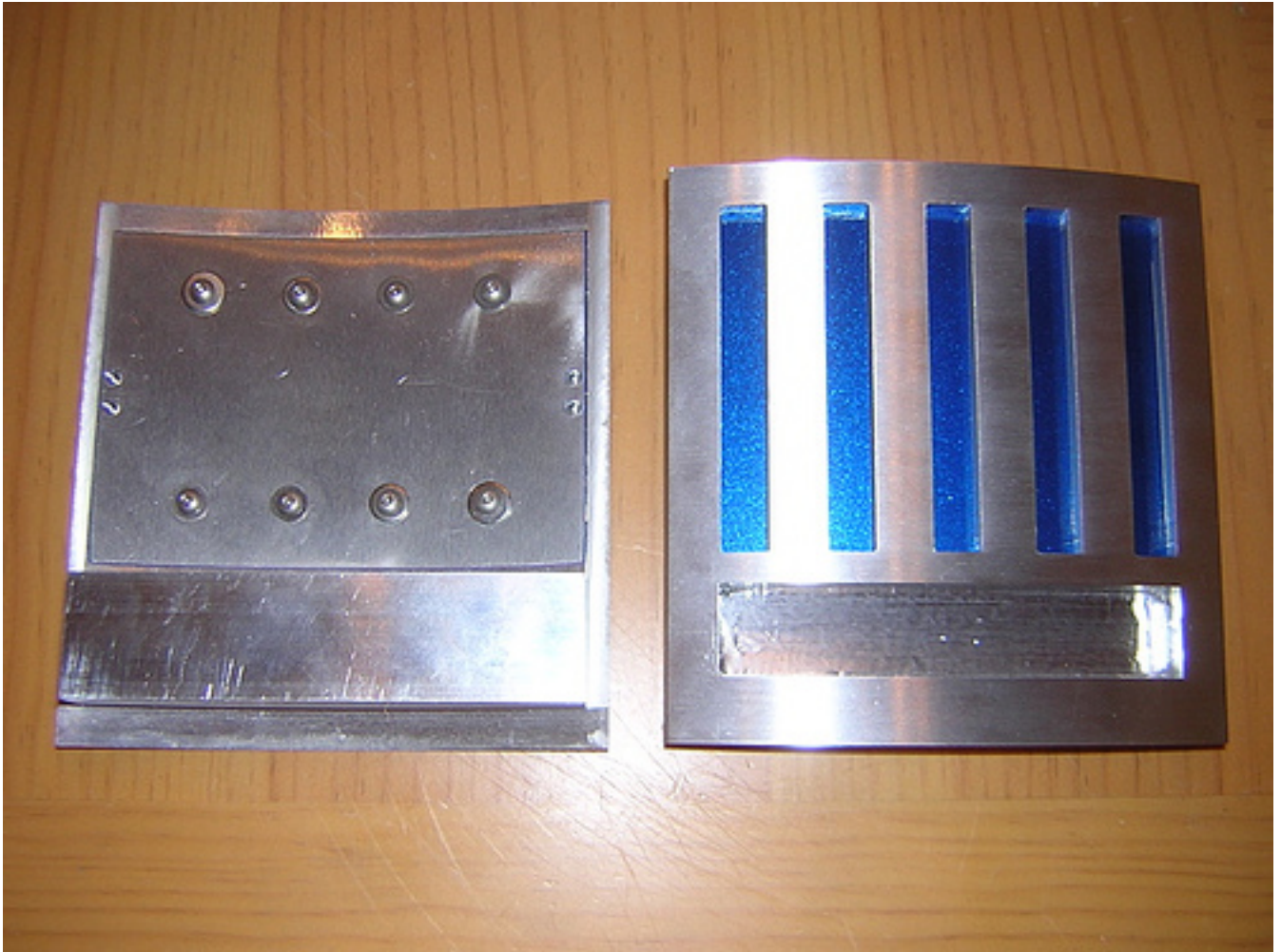
## **Secured Pocket Vent Back Plates**

Tonight I determined the paint on the back plates for the pocket vents had dried sufficiently to screw them down.

Eight screws hold the back plates to the pocket vents. I still need to permanently affix these to the body, most likely with silicone.







*posted by Victor Franco at 11:41 PM* 0 COMMENTS

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SATURDAY, OCTOBER 14, 2006

## Started Cutting Center Foot Shell, Alu Octagon Ports Arrive

I *finally* started work on my PVC center foot shell today.

I began with the beveled cuts for the top and bottom edge of each of the four sides.

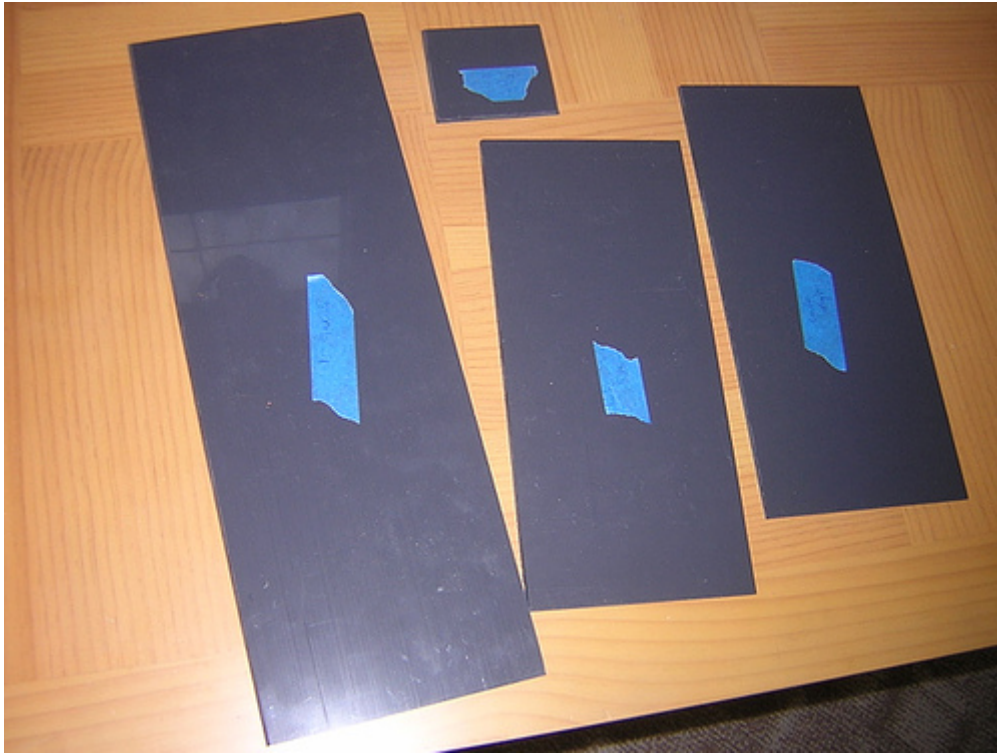


Next, I cut the very top piece of the foot shell, which also has beveled edges. This piece will be further cut later, when a 1" wide channel is made for the ankle tip to connect to the foot.



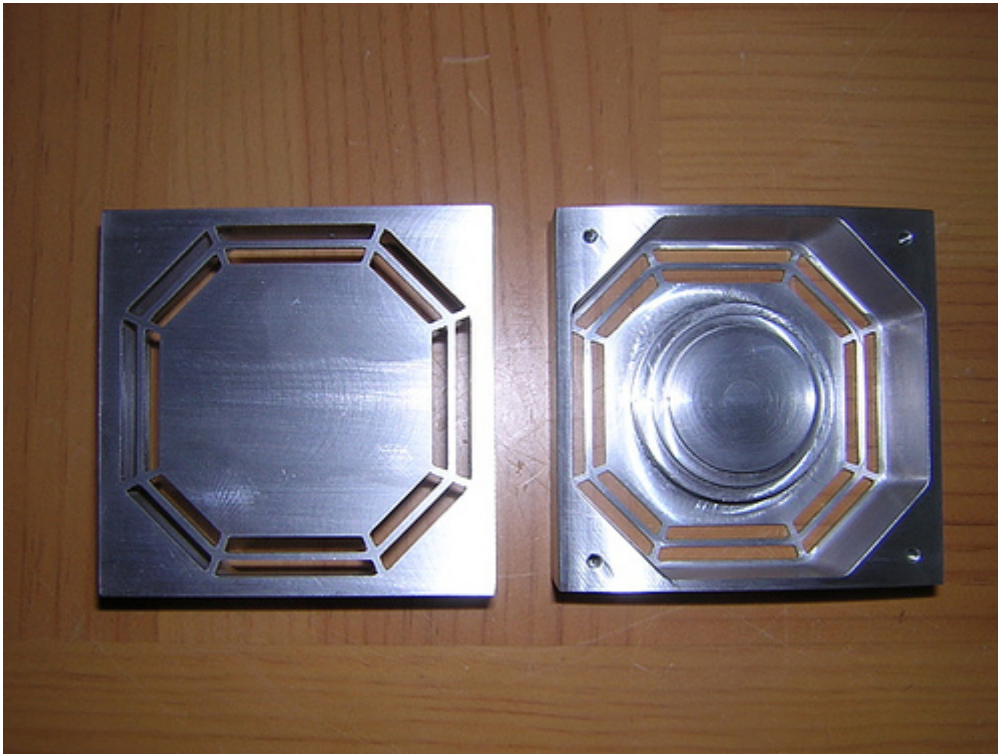
I came to a grinding halt when it was time to cut the angles of the sides, as I discovered that the blade on the miter saw I'm using is not large enough to cut across the required distance. I will see about begging to use another miter saw.

In the meantime, I labeled each piece, and put the work on hold. (One of the pieces I cut was large enough to cut two pieces from it, once I have access to an adequate miter saw.) Hopefully I can resume work on these shortly.



Last but not least, the incredibly good looking aluminum octagon ports from Michael McMaster arrived today. Right now, my frame cannot accommodate these without more cutting. If/when I need to take the skins off again, I will see about cutting the frame to fit these great parts. For now, I'm not letting them go(!). :)





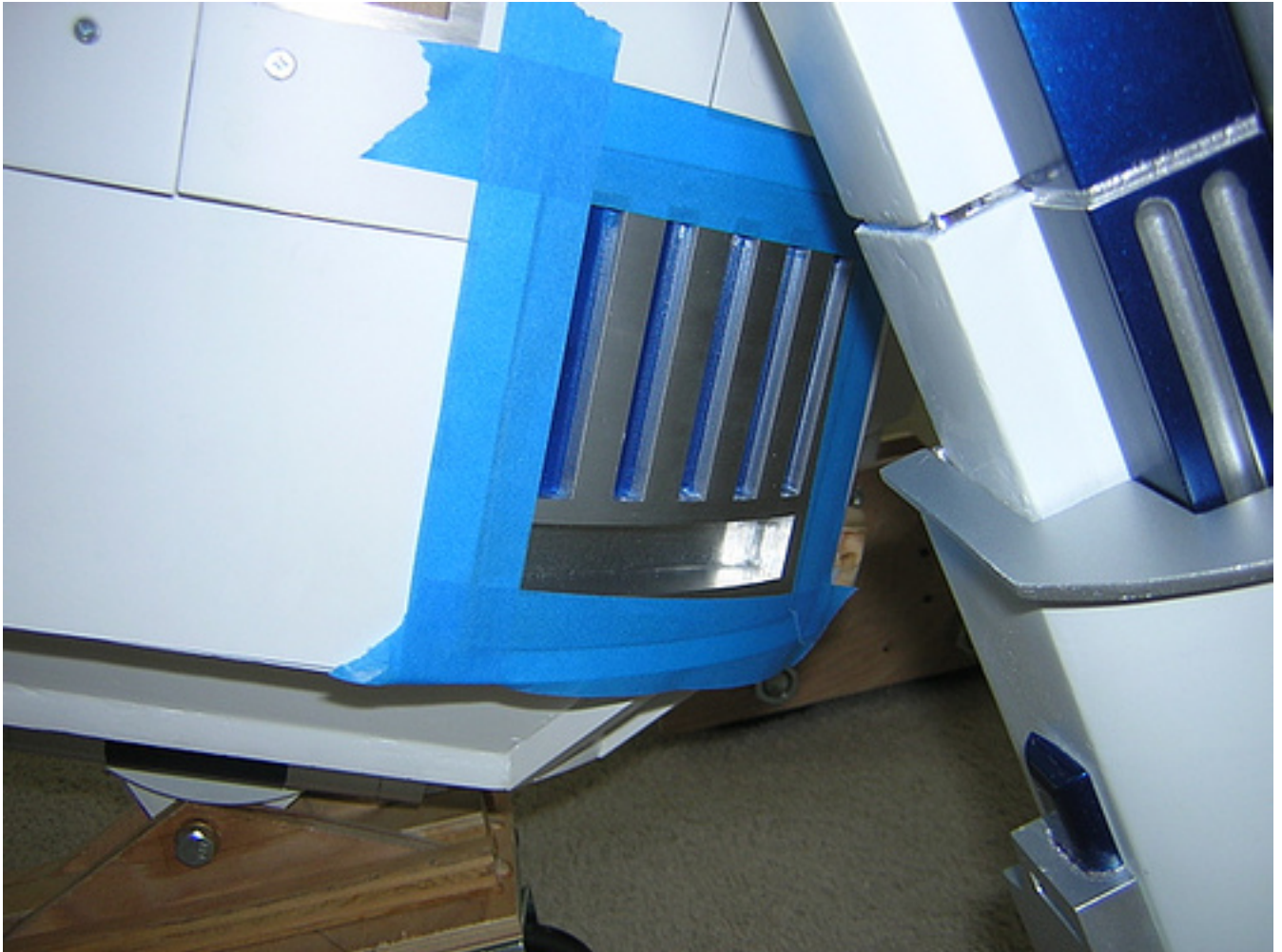
*posted by Victor Franco at 10:11 PM* 0 COMMENTS

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SUNDAY, OCTOBER 15, 2006

## Glued Down Pocket Vents

Today I used silicone to affix the pocket vents to the frame and skins. Blue tape holds the pocket vents in place while the silicone dries.



Once the side vents arrive next month, all of the holes in the body will be done!



*posted by Victor Franco at 3:26 PM* 0 COMMENTS

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MONDAY, OCTOBER 16, 2006

## Glued in Horseshoe Screws

Months [after the fact](#), I finally glued in the screws that hold the horseshoes onto the legs. I waited to see if I needed to cut the screws down, but testing tonight showed they should be fine.



A nut on each screw secures the whole thing to the leg. The tops of the booster covers work the same way. Super glue holds the screws in the horseshoes. (Gotta love a product named "Zap-O.")





This is the stuff I do when I feel the need to fill space here. Thrilling, eh?  
*posted by Victor Franco at 10:26 PM* 0 COMMENTS

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TUESDAY, OCTOBER 17, 2006

## Aluminum Tubing Arrives

Joe's aluminum tubing arrived today. I hope to construct the internal structure of the feet from this, along with Darryl's channel that I [ordered previously](#).



*posted by Victor Franco at 9:04 PM* 0 COMMENTS

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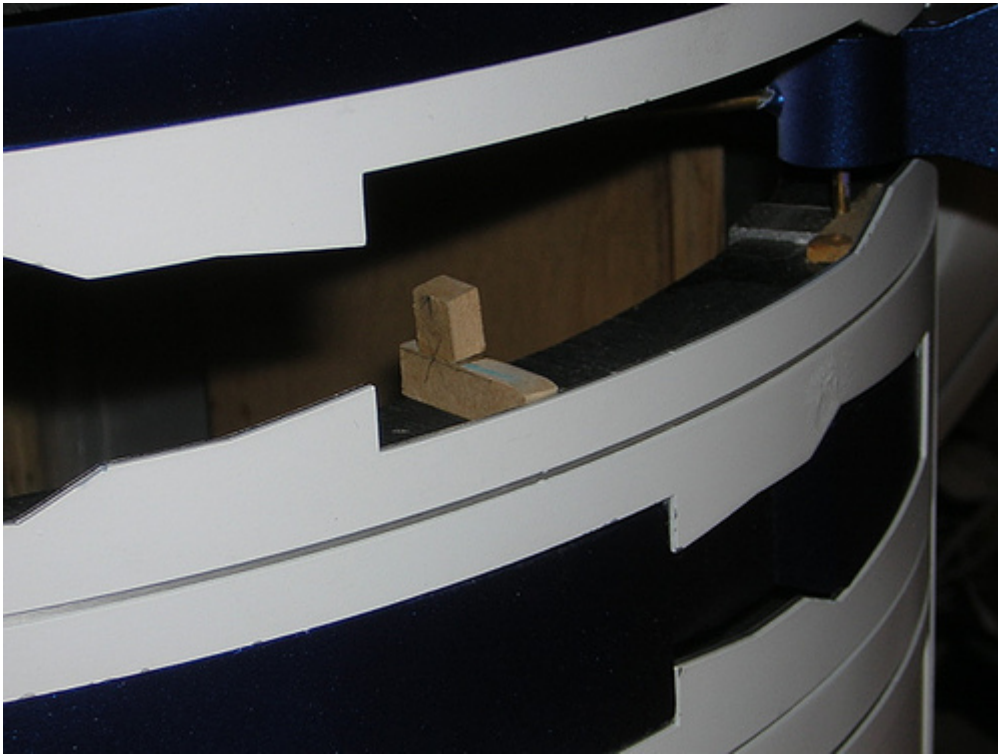
WEDNESDAY, OCTOBER 18, 2006

## **Started Working on Utility Arm Backstops**

Tonight I cut a couple of pieces of 1/4" MDF, to serve as backstops for the utility arms in the frame. Something's got to keep the arms from turning right into the body, so these should do the trick.

I will paint them black before I glue them down permanently.





*posted by Victor Franco at 10:26 PM* 0 COMMENTS

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THURSDAY, OCTOBER 19, 2006

## Painted Utility Arm Backstops

Once again, getting the bare minimum done.

I painted the utility arm backstops flat-black today. Not sure if I'm going to glue these down immediately, or wait until I'm confident the arms and their pivot points won't change. I'll probably wait a bit.



*posted by Victor Franco at 9:29 PM* 2 COMMENTS

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SATURDAY, OCTOBER 21, 2006

## **More Center Foot Shell Cutting**

After a week away from the center foot shells, I was able to pay a visit at Mike's, where he had a 12" blade on his compound miter saw that was able to finish the remaining cuts.

As each cut came up, the miter saw was tilted and angled to the required setting. This was a somewhat iterative process, and it helped a lot that we could refer to Mike's finished center foot shell.





I did one cut, but Mike did the other two dozen or so.

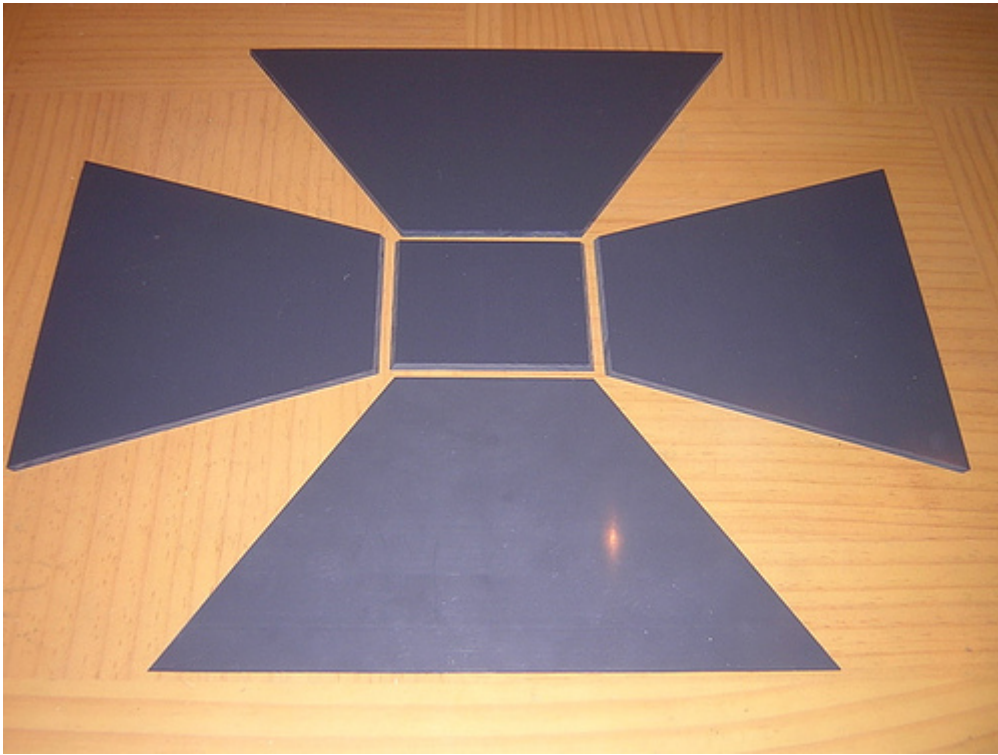




In fact, we decided it made sense for Mike to cut an extra set for himself. Some of the cuts were made on the table saw, some on the miter saw.



The end result was just what we hoped for. We still need to cut the strips toward the bottom of the four sides of the foot shells, and we need to cut the left and right sides to put a groove in place, and allow access to the inside of the shell. Hopefully this will continue next weekend.



*posted by Victor Franco at 9:40 PM* 0 COMMENTS

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SUNDAY, OCTOBER 22, 2006

## Measure Once, Cut 48, and Start All Over

"This would be a pretty misleading weblog if I just showed the stuff that went right..." (Entry from [December 10, 2005](#).)

Mike had some unexpected free time today, so we decided to try cutting the small strips that make up the bottom of the foot shells. Unfortunately, we misinterpreted the blueprints. Instead of cutting a bunch of strips of PVC at an 18 degree angle, we cut them all at a 36 degree angle.





Only after we were done cutting up a few sheets of PVC, and a few hours on the table saw, did we realize the error.

Oh well, these things happen.

We hope to try again next weekend. Looking at the bright side, it was good practice, and we got a usable jig out of it. In the meantime, there are a lot of PVC sticks offering a vertical support structure to trash in the trash can.



*posted by Victor Franco at 10:21 PM* [0 COMMENTS](#)

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TUESDAY, OCTOBER 24, 2006

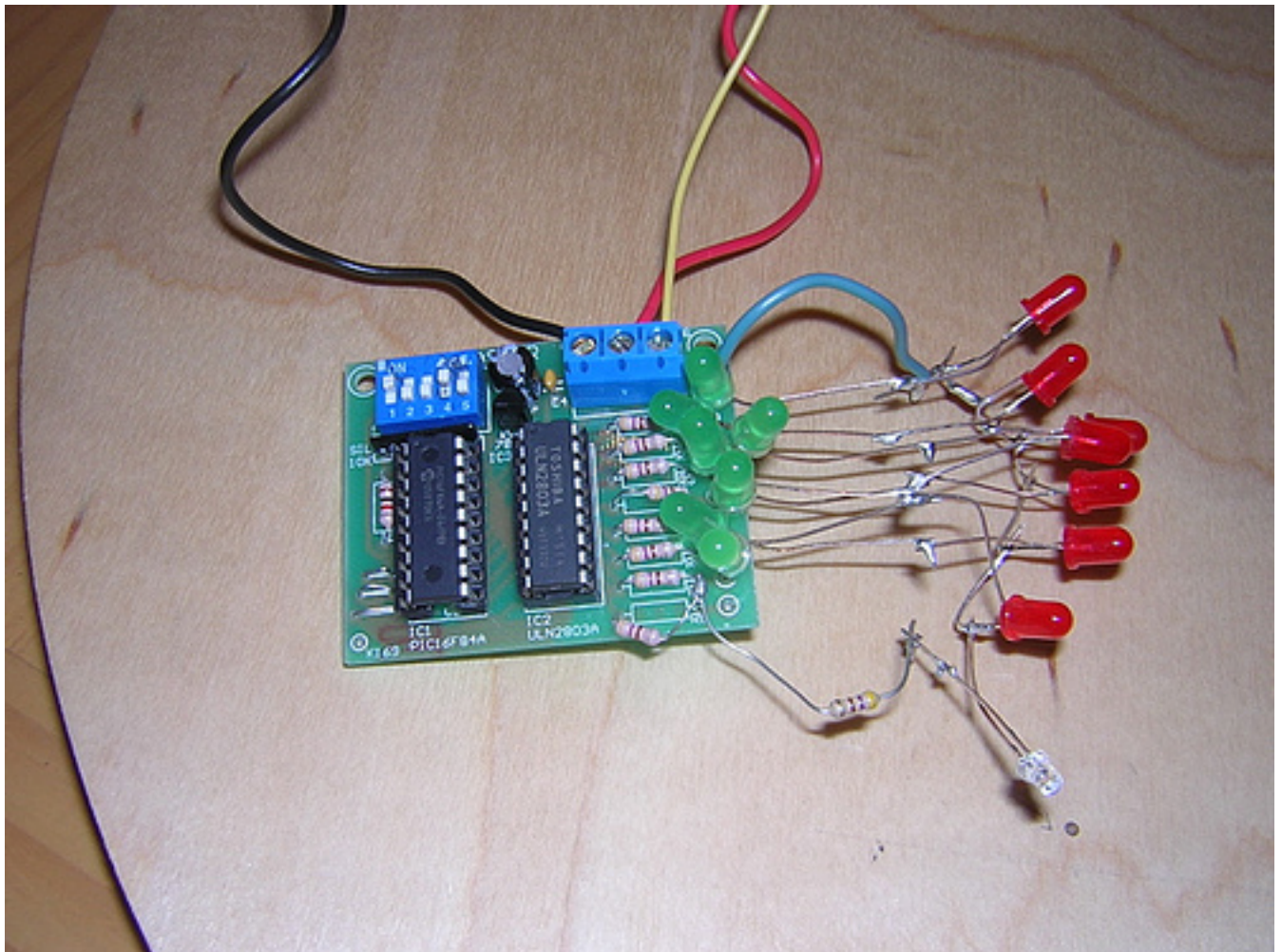
## Started Working on Temporary Rear Logics

Way back in [September 2005](#), I put together one of the PIC flasher kits I ordered from Carl's Electronics. Well, until there is a run of rear logics, I've found a use for it.

Copying Mike as usual, I'm going to use 16 LEDs to light the rear logics, with a fake set of LEDs printed on a transparency, rather than attempt to solder up 108 actual LEDs. The transparency will be lit from the back by the 16 LEDs that will be blinking and cycling via the PIC flasher circuit.

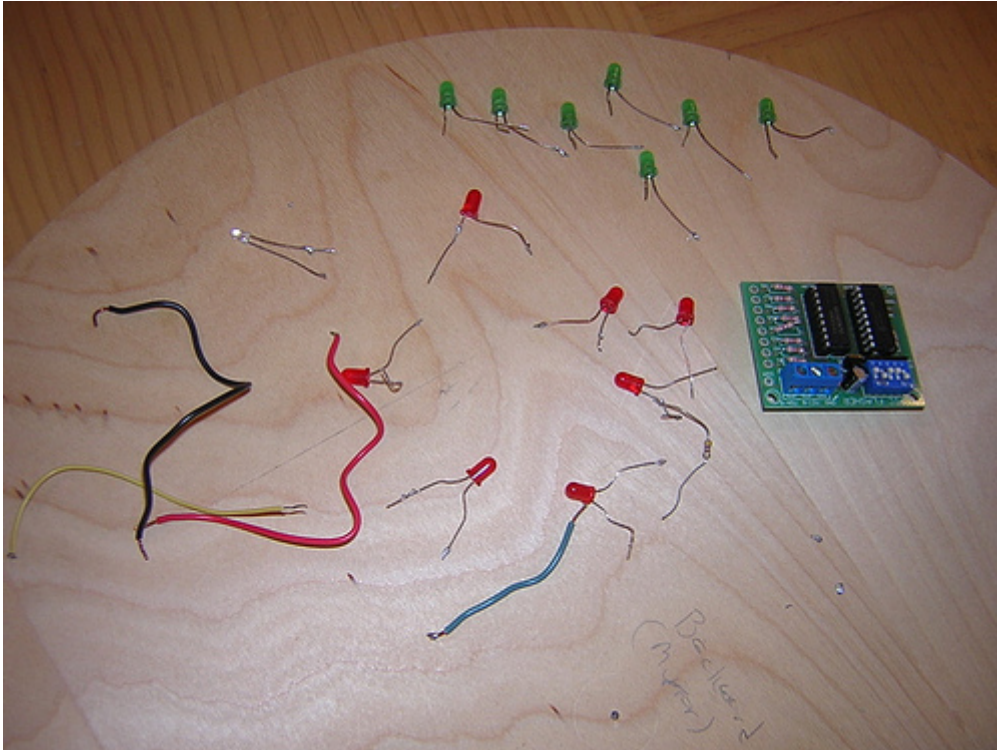
The first order of business was digging up the old board, which still had the LEDs from the kit sloppily soldered together.



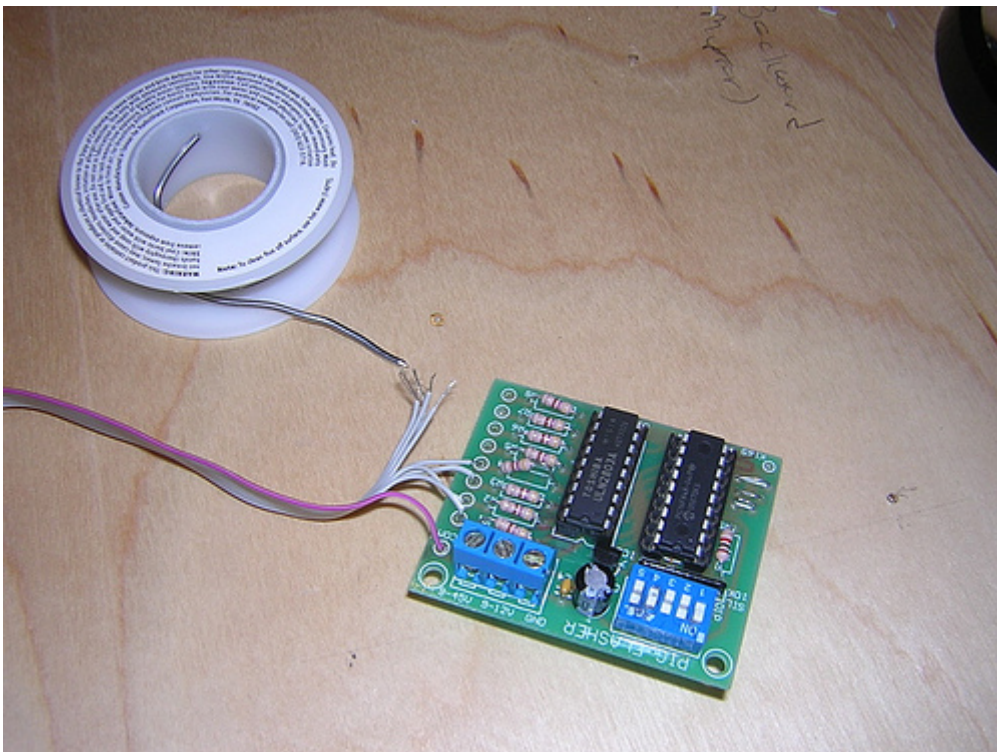


Next, it was time to start pulling off those LEDs.





Finally, I pulled off nine strands of some ribbon cable for an IDE drive and soldered the ends to the PIC flasher board, one by one.



Tomorrow I hope to start working on the other end of the cable. I'll cut some project board to hold the LEDs, and then solder them up.

*posted by Victor Franco at 10:16 PM* 0 COMMENTS

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WEDNESDAY, OCTOBER 25, 2006

## Tested Rear Logic Wiring, Aluminum 2x4 Arrives

I had planned to finish wiring up the rear logics tonight, but all I have are superbright LEDs, and they are super bright! They may be too bright without something to dim them (e.g. some marker on the LED, or film in front of it). I think I'll try to find some LEDs of lower intensity. In the meantime, I was able to verify that last night's wiring job works.

Some aluminum 2x4 (0.25" thick wall) that I ordered from McMaster-Carr arrived today. Together with the tubing I bought from Joe, I should have the raw materials for a basic drivetrain structure.





I forgot to mention that I ordered the [CFSound III](#) sound board and Sense 24 input switch for R2's audio system yesterday. It's on back order, should ship the first week in November.

*posted by Victor Franco at 10:35 PM* 0 COMMENTS

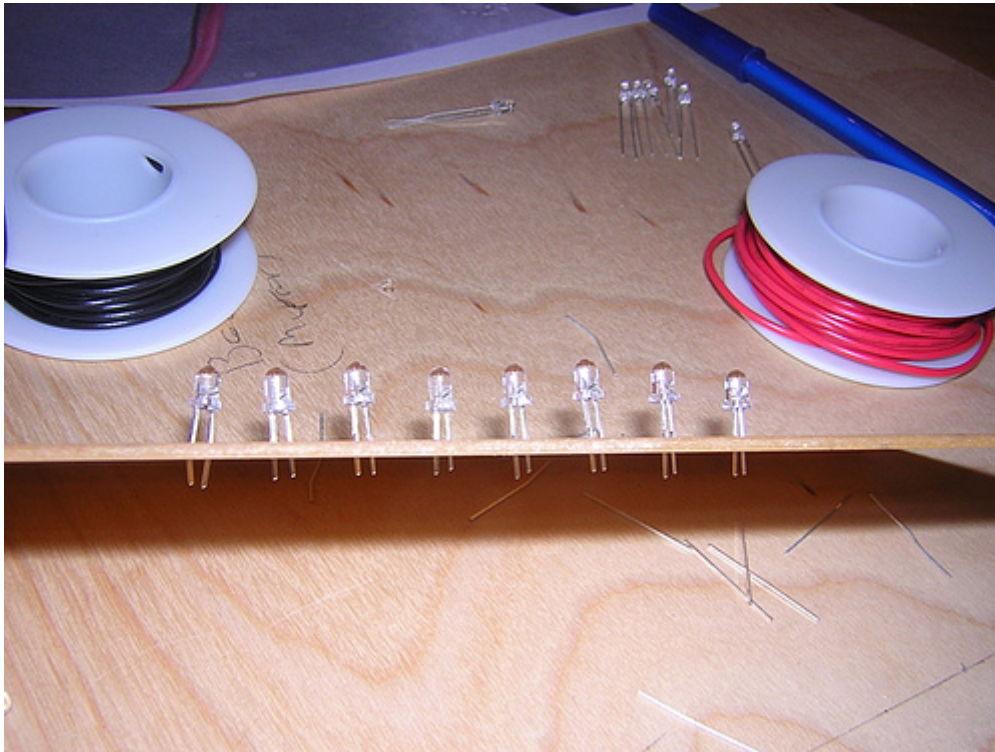
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THURSDAY, OCTOBER 26, 2006

## Started Rear Logic LEDs

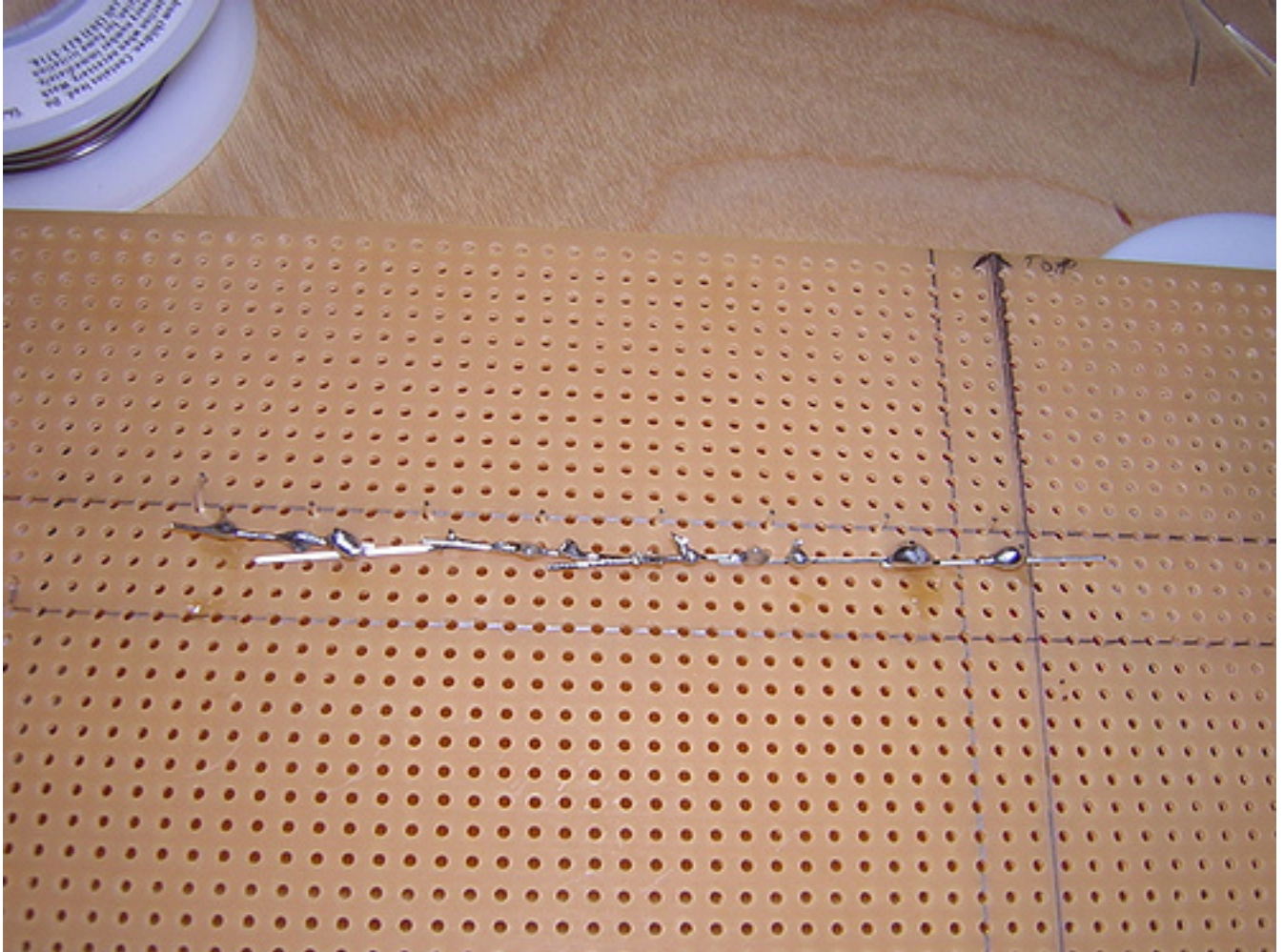
I decided to go ahead and start wiring up my rear logic LEDs using the superbrights that I already have. If need be, I can dim them somehow later.

First, I had to spend more time than I anticipated, organizing the LED pattern so that the 16 LEDs on only 8 wires would appear to blink as randomly as possible. Since two LEDs will share each wire, a regular wiring pattern wouldn't look so good. Once I had the pattern set, I started placing the top row of 8 LEDs. The LED leads needed to be trimmed down, they were way too long.



The PIC flasher circuit has a common connection for all the anodes. Being the lazy bum that I am, I just stitched the anodes together by soldering the left-over sections of the trimmed LED legs. I tested each individual LED after I was done with the whole row, and they each blinked properly. So even though the solder job is ugly, it works.





To be continued...

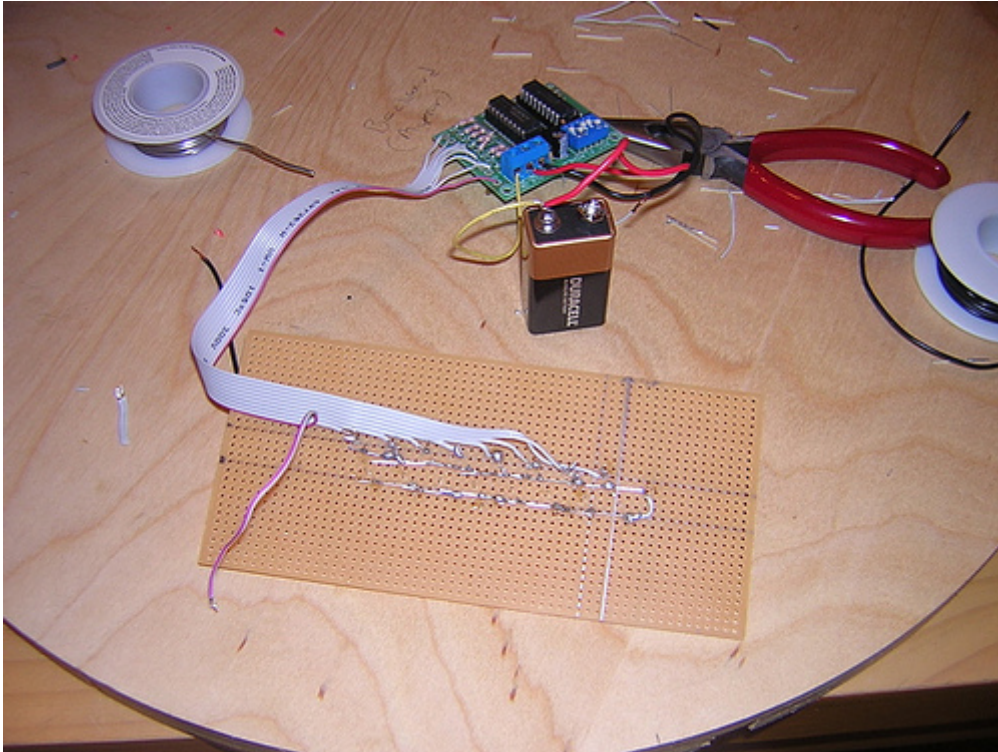
*posted by Victor Franco at 10:51 PM* 0 COMMENTS

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FRIDAY, OCTOBER 27, 2006

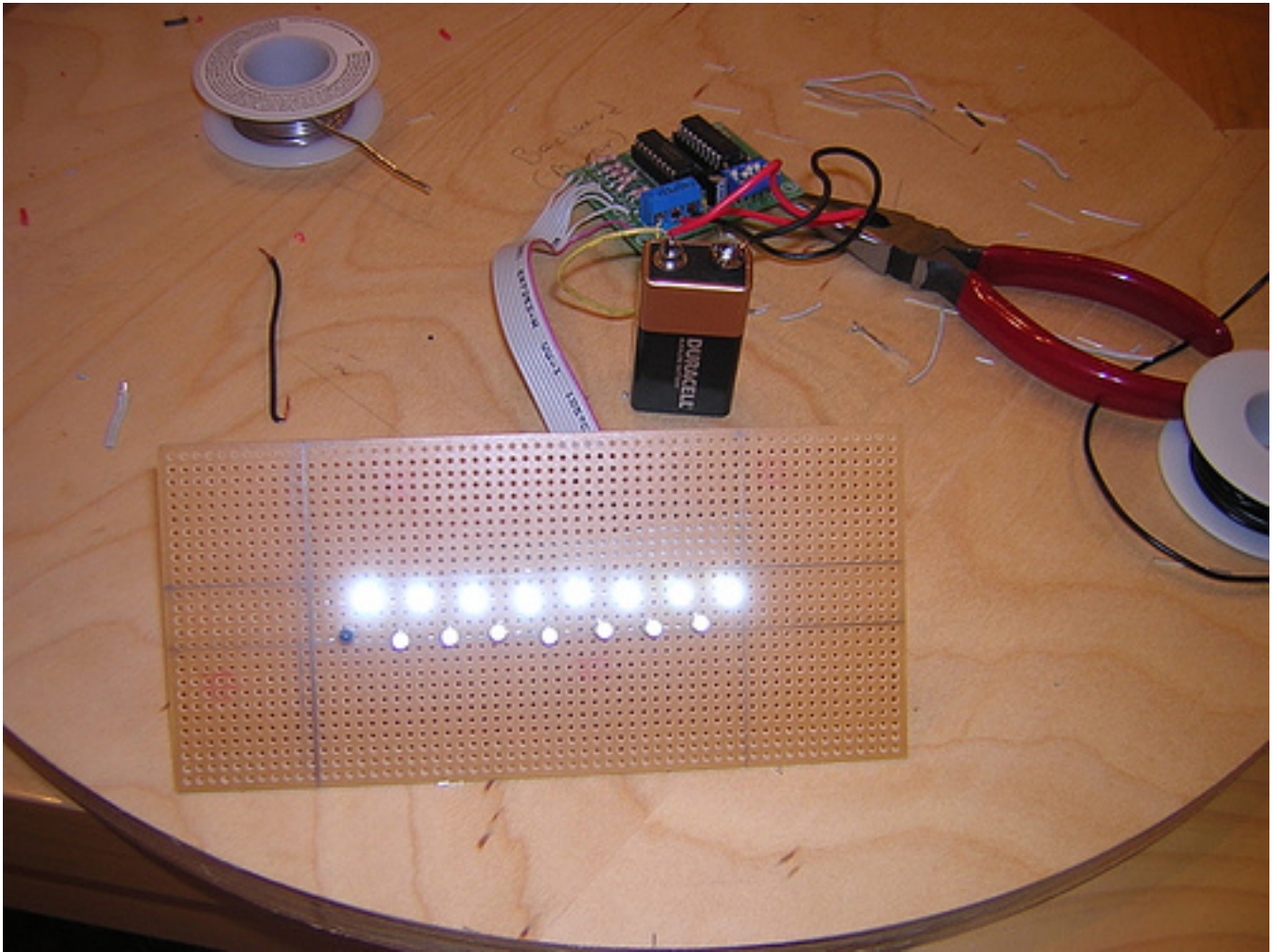
## Half of the Rear Logic LEDs Wired

More soldering tonight, as I managed to wire up the top row of 8 LEDs.



Looks like the crude soldering job was good enough to work. I'll start criss-crossing some of the LEDs' cathodes to finish the bottom row tomorrow.





*posted by Victor Franco at 9:36 PM* 0 COMMENTS

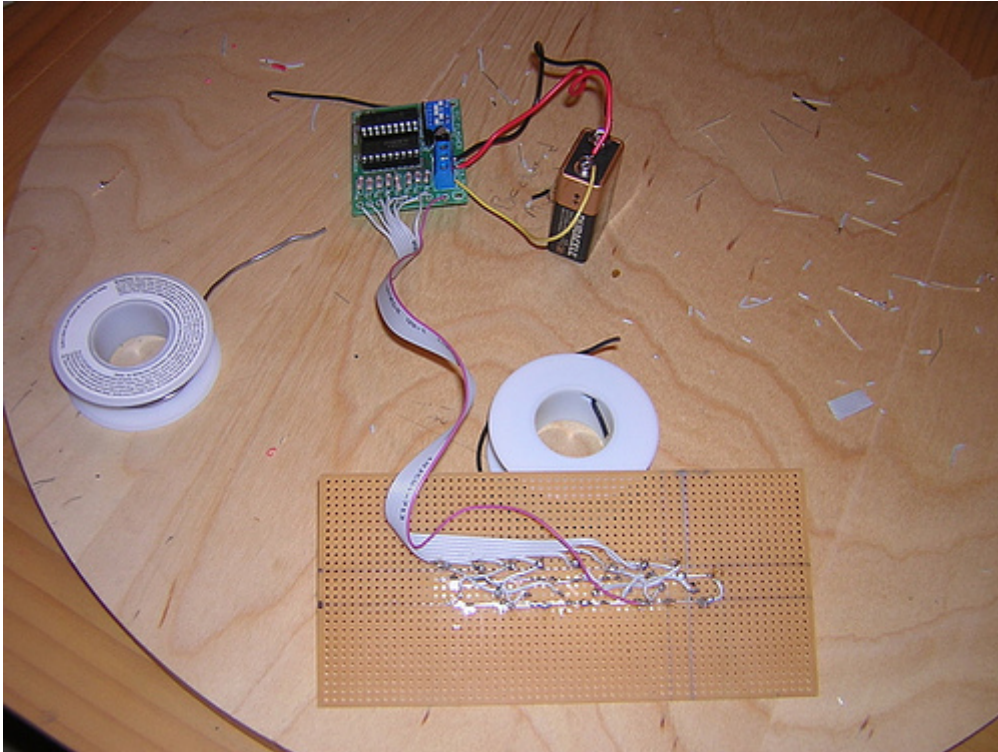
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SATURDAY, OCTOBER 28, 2006

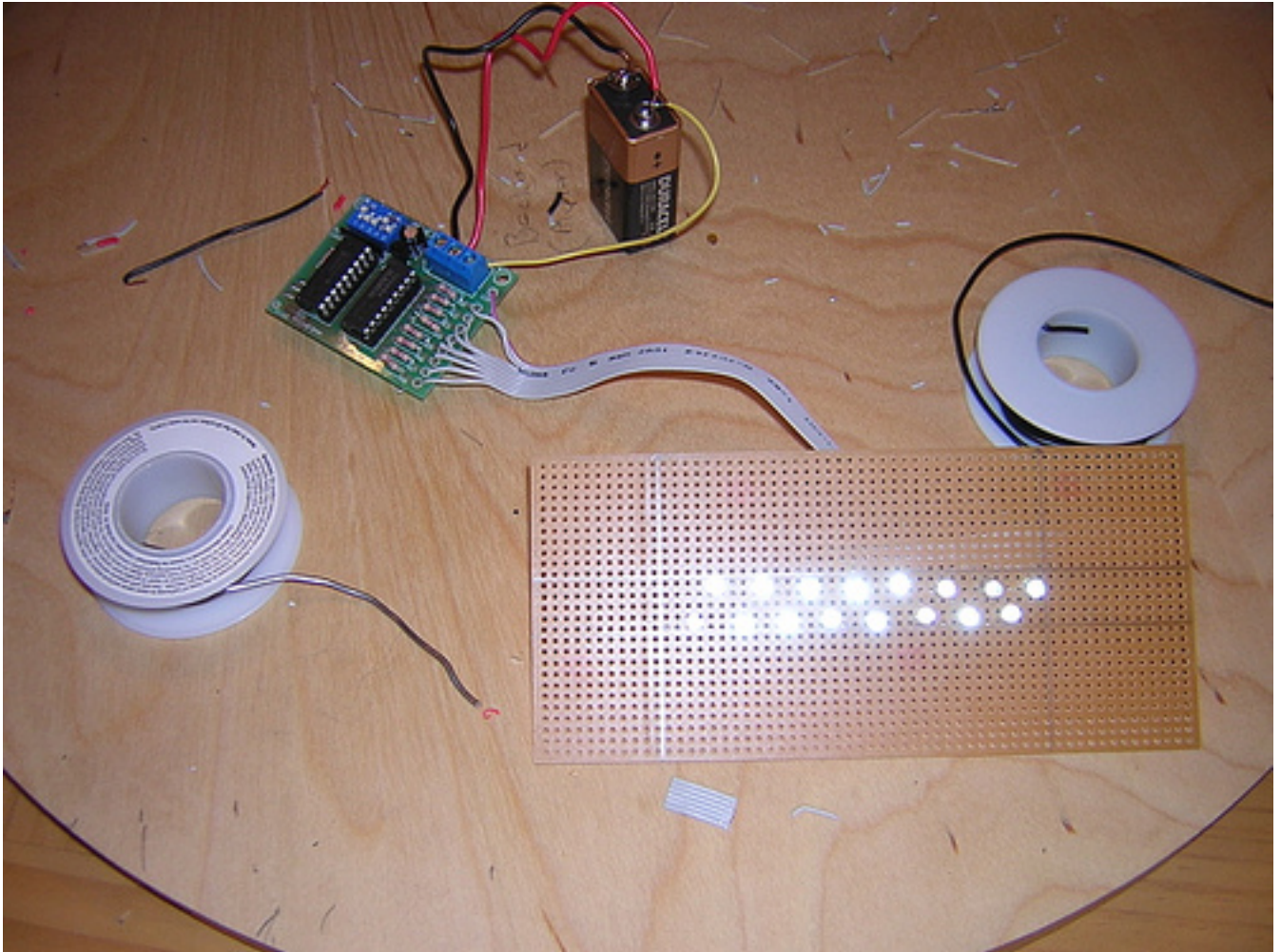
## **Finished Wiring Rear Logic LEDs**

Tonight I wired up the bottom row of LEDs, criss-crossing in a semi-random pattern to the top row.





All the lights blink the way I want. Recall that I will overlay a transparency with simulated color LEDs over these 16 lights, as a temporary solution for the rear logics while I await a real run of them.



I still need to build a mounting harness for the board, and get it installed and wired up in the dome.

*posted by Victor Franco at 9:35 PM* 0 COMMENTS

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SUNDAY, OCTOBER 29, 2006

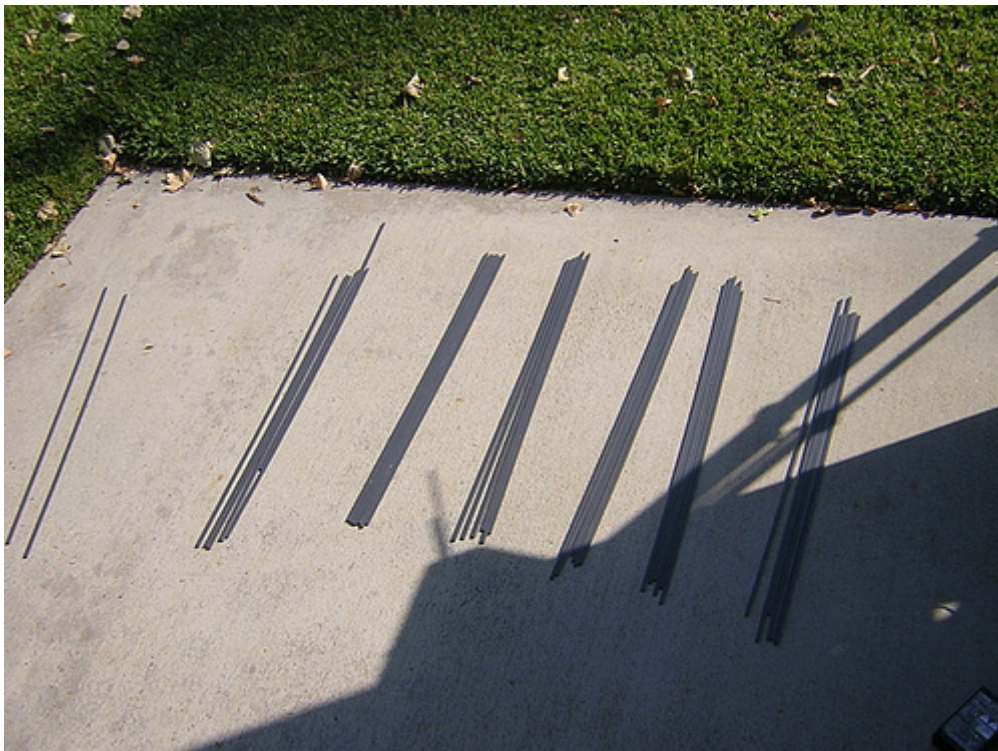
## Recut PVC Foot Strips

Mike and I gave it another go today, recutting the strips of PVC that go around the bottom of the foot. The PVC sawdust gets everywhere. Note the adorable bunny suit Mike is wearing to keep clean.





Thirty-six more strips were cut (plus twelve backing strips, plus a few extras). The blueprints show different angles for the outer feet (12 degrees) vs. the center foot (18 degrees). We decided to go with what Mike did on his first droid, and cut all the strips at 12 degrees.





Later on, Matthew Henricks dropped by to talk frames with Mike.



Finally, apropos of nothing, the Goodyear Blimp Spirit of America buzzed me on the way home, so I took its picture. In fact, it's still flying around here, perhaps making practice landings at the nearby Tustin Marine Corps Air Station.



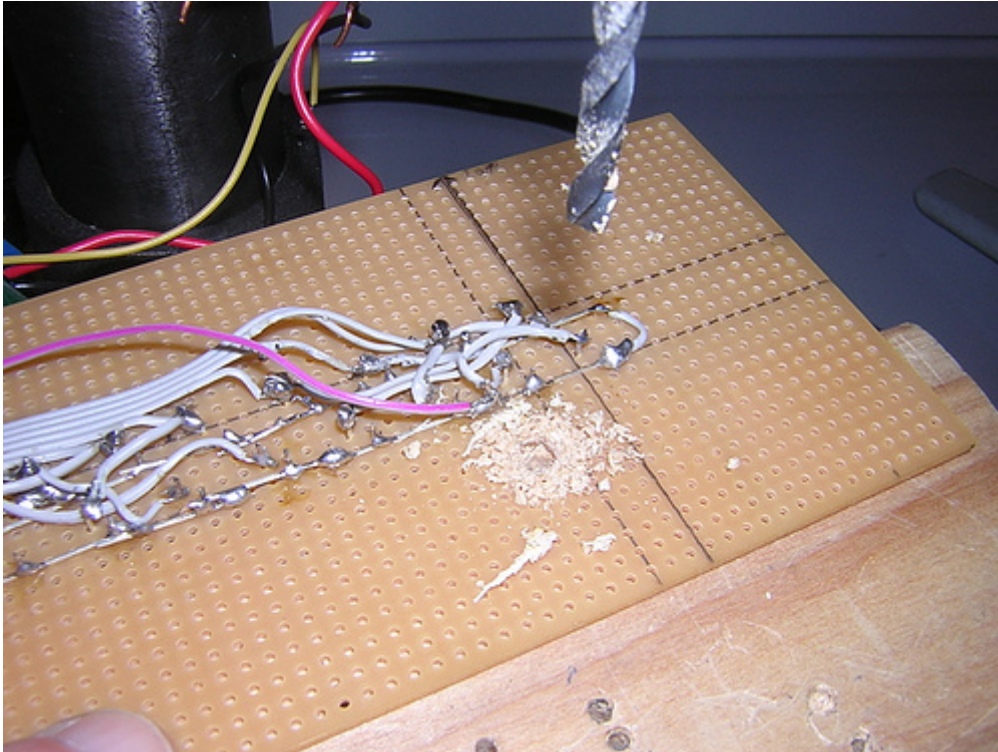
*posted by Victor Franco at 5:44 PM* [0 COMMENTS](#)

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MONDAY, OCTOBER 30, 2006

## More Rear Logic Work

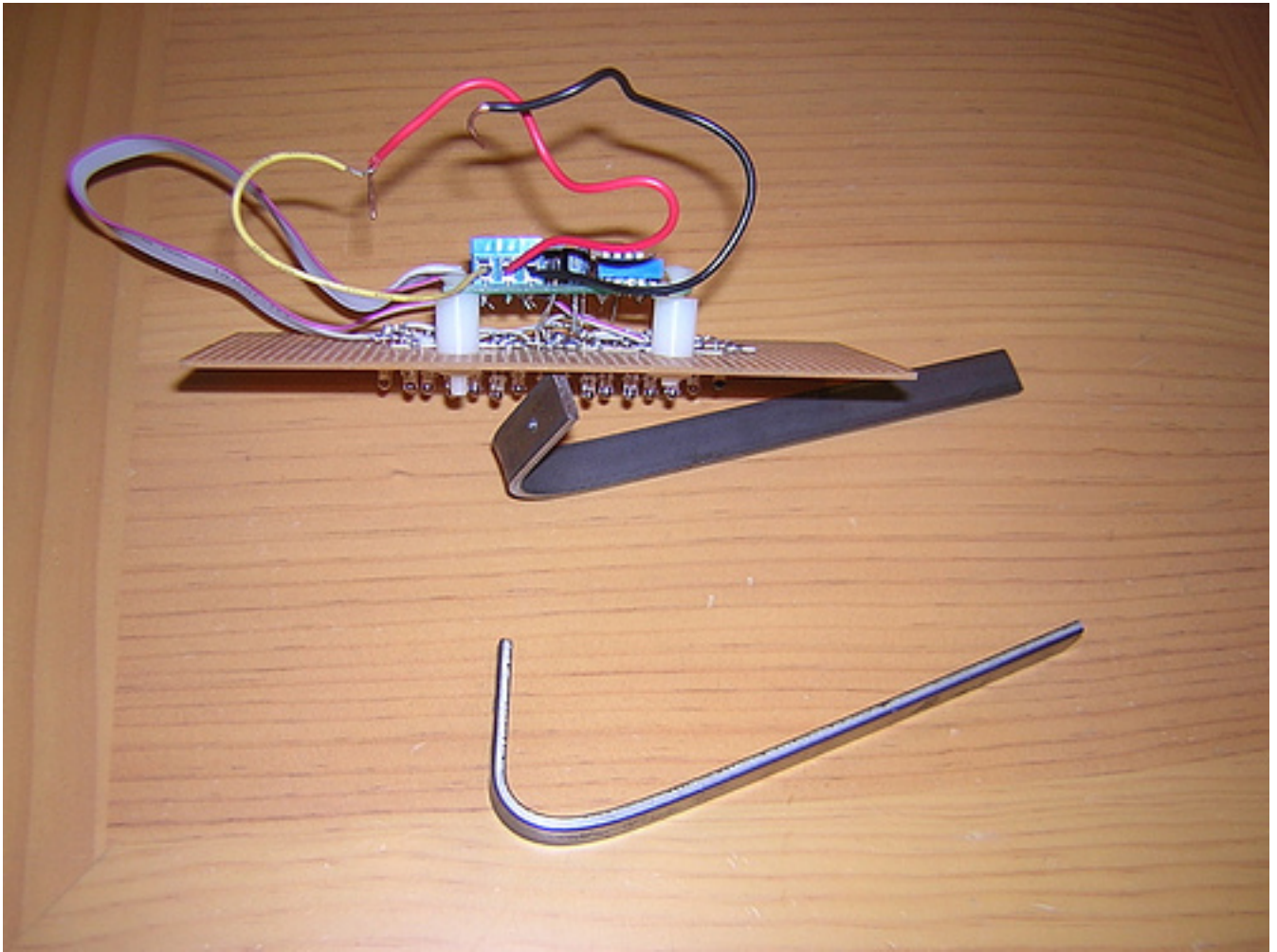
Tonight I started work on getting the rear logics mounted. First, I drilled the perf board so that I could mount the PIC flasher circuit to it, using nylon screws, nuts and standoffs.



Next, I cut a couple of pieces of flat metal bar, drilled a hole in one end of each of them to screw them down to the dome ring, and bent them so that they will rest flat on the dome ring. I will screw the perf board onto the bars.

I still need to bend and cut the bars down a bit more, and drill the perf board such that the LEDs will be centered in the dome hole for the rear logics, when mounted to the bars.





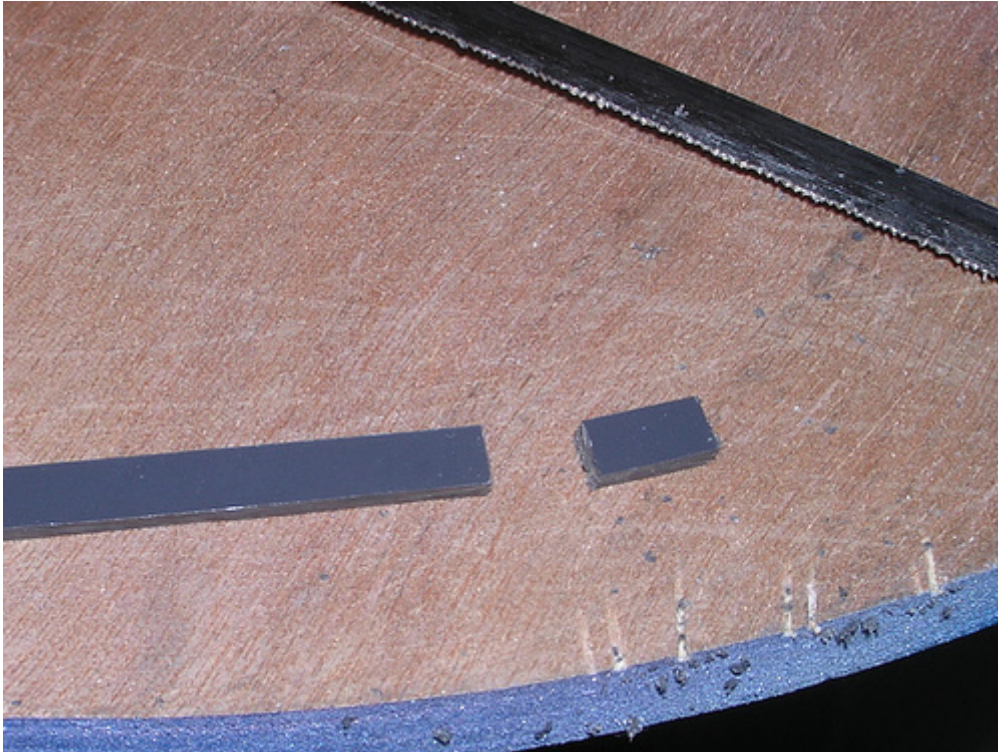
*posted by Victor Franco at 10:52 PM* 0 COMMENTS

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WEDNESDAY, NOVEMBER 01, 2006

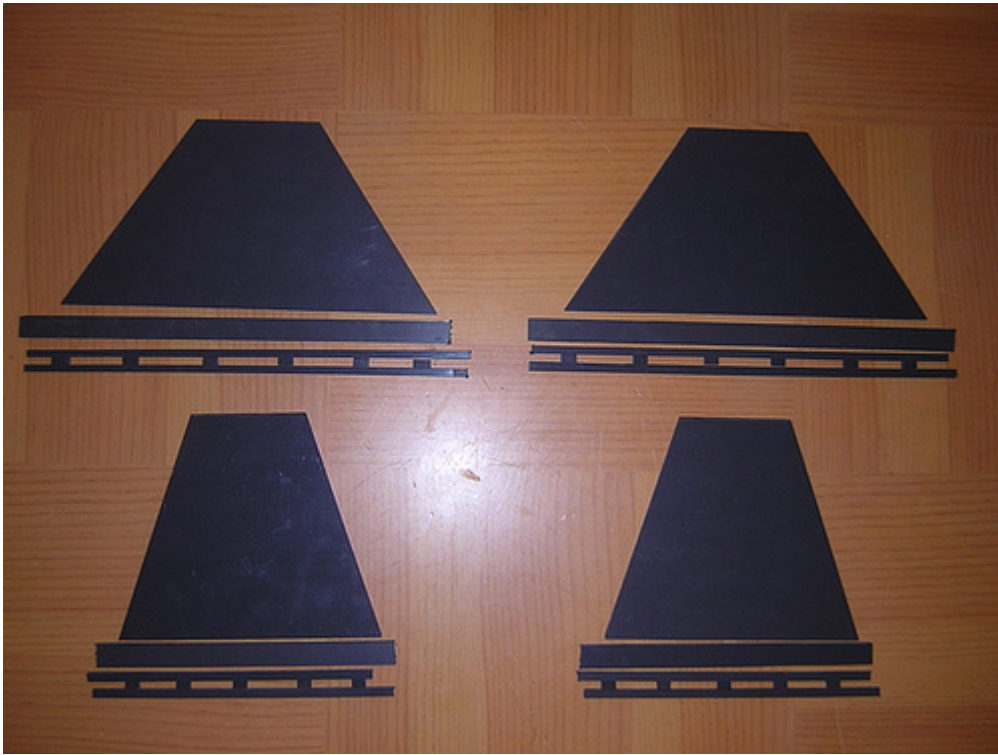
### **More Foot Shell Strip Cutting**

A fun-filled evening cutting tiny pieces of PVC with a hacksaw. I cut down several of the strips of PVC that Mike and I cut this past Sunday. Tonight I focused mainly on the center foot.



Each bottom edge of the foot will have a 0.6" tall backing plate, and from top to bottom, three rows of 0.2" tall PVC pieces that will be glued on top of the backing plate. The top row consists of a 0.2" tall strip of PVC running the length of the edge of the foot. The middle row has several "window separator" pieces of PVC cut to spec. The bottom row is another 0.2" tall strip of PVC running the length of the edge of the foot.

Thirty-eight small window pieces were cut for all three feet (this includes some spares), along with trimming the 24" strips down to size for the top and bottom rows of the center foot. The strips of PVC are cut a little long, to allow for trimming to exact size later at glue-up time.



*posted by Victor Franco at 10:27 PM* [2 COMMENTS](#)

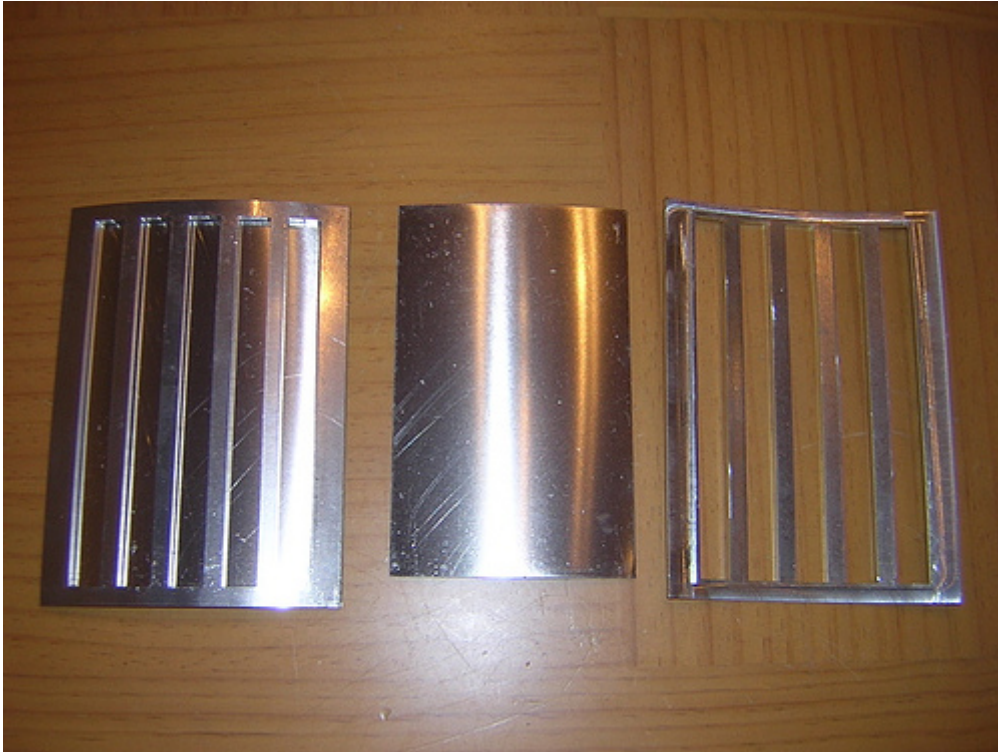
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THURSDAY, NOVEMBER 02, 2006

## Side Vents Arrive, Little Progress on Foot Shells & Rear Logics

Whoo hoo! The side vents arrived today! With these, now every hole in the body is filled! (Michael McMaster's aluminum coin slots will replace the resin ones when they arrive.)





It would be sacrilegious not to tape the backing plates on, and do a loose fit in the body. I hope to paint the backing plates this weekend.



I also worked for a few minutes on the PVC foot shell strips, I have to cut the ends

for the middle row a bit longer than the other separator pieces that I cut yesterday. There's 24 of these total, I only cut about 10.

I also cut down the bars that will hold the rear logics in place, and then bent them some more in the vice, and drilled mounting holes for the perf board.



I think I still need to bend them even more, as a test fit with the logics in the dome didn't work out quite right.



*posted by Victor Franco at 11:46 PM* [0 COMMENTS](#)

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FRIDAY, NOVEMBER 03, 2006

## **Finished Cutting PVC Strips for Feet, Prepped Side Vents for Painting**

Tonight I cut several more strips of PVC that serve as endcaps for the middle row of the bottom of each of the feet.





I also sanded the backing plates of the side vents and wiped them down with acetone, in preparation for painting.

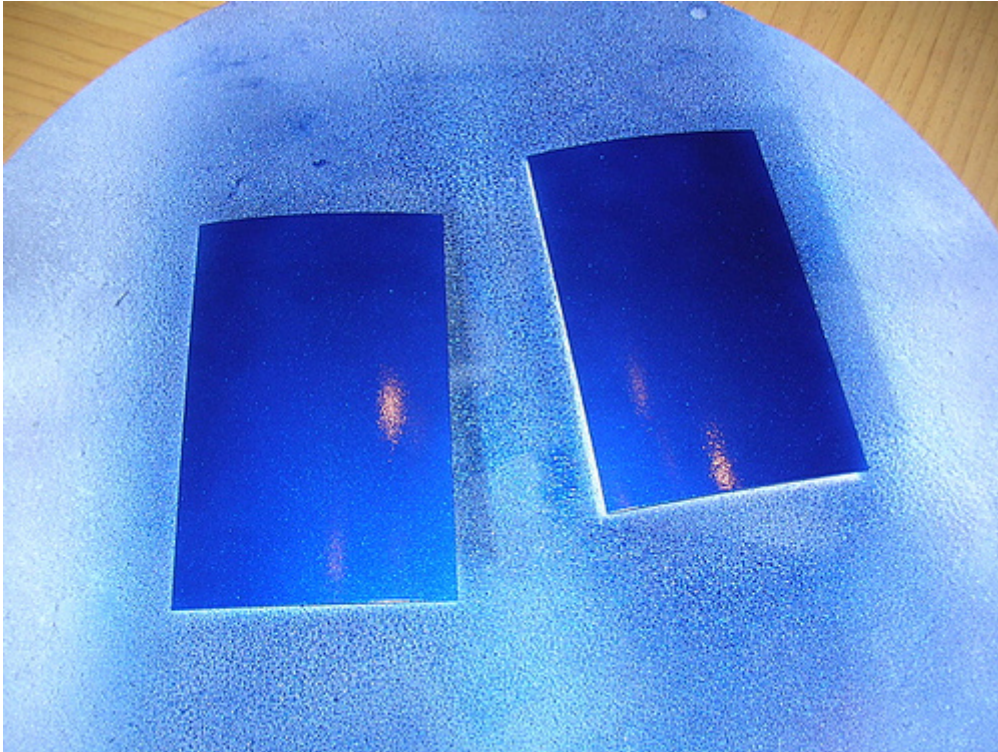
*posted by Victor Franco at 11:54 PM* [0 COMMENTS](#)

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SATURDAY, NOVEMBER 04, 2006

## **Painted Side Vents, Cinemax Event**

Today I painted the side vents blue. The only items remaining to be painted blue now are the battery box harnesses.



I also dropped by the Star Wars Cinemax event at the Santa Monica 3rd Street Promenade. Some of the R2 builders at the event posed for a group picture.





From left, Victor Franco, Michael McMaster, Max Cervantes, William (Darth Will) Miyamoto, Mike Senna, and Vince Sanchez.

*posted by Victor Franco at 11:21 PM* 0 COMMENTS

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SUNDAY, NOVEMBER 05, 2006

## Started Gluing PVC Foot Strips

This evening I started gluing the 0.2" strips of PVC onto the 0.6" backing piece. I only glued together those strips that will sit immediately below the front and back faces of the center foot. I'll get to the others as the week progresses.

The strips are cut long, and will be cut down to size later.



*posted by Victor Franco at 10:34 PM* 0 COMMENTS

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MONDAY, NOVEMBER 06, 2006

## CFSound III Arrives

I didn't get any building done, but my [CFSound III audio system](#) arrived today. I got caught without a CF card programmer, so I wasn't able to try it out much (the BASIC interpreter works over the serial port...).

R2 now has a voice box. Literally.





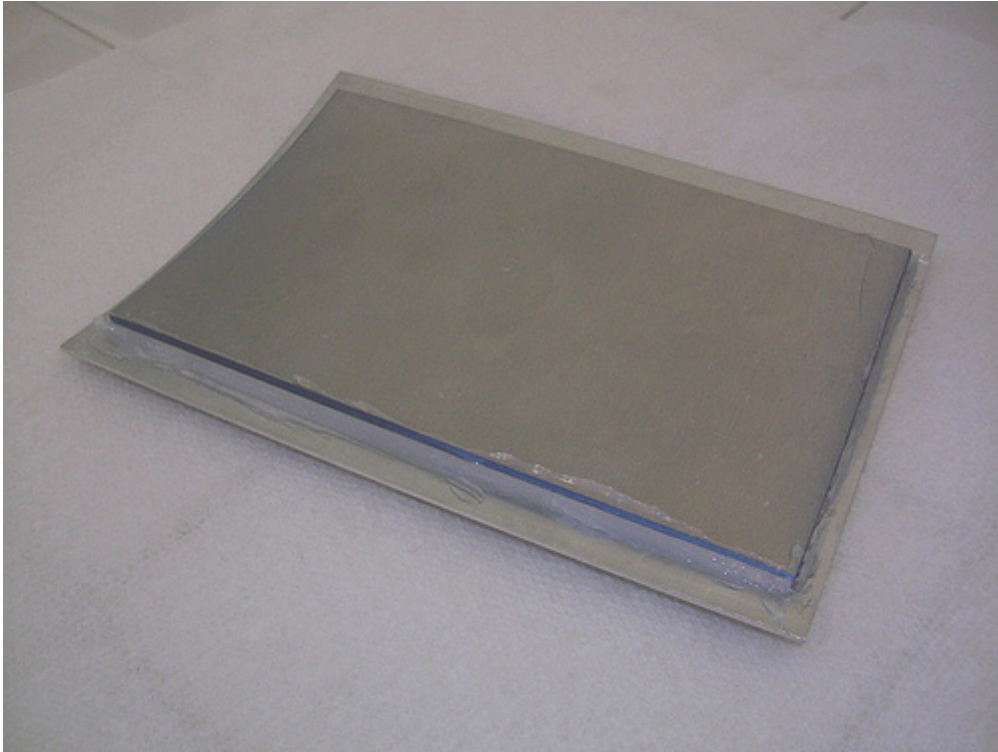
*posted by Victor Franco at 9:54 PM* 0 COMMENTS

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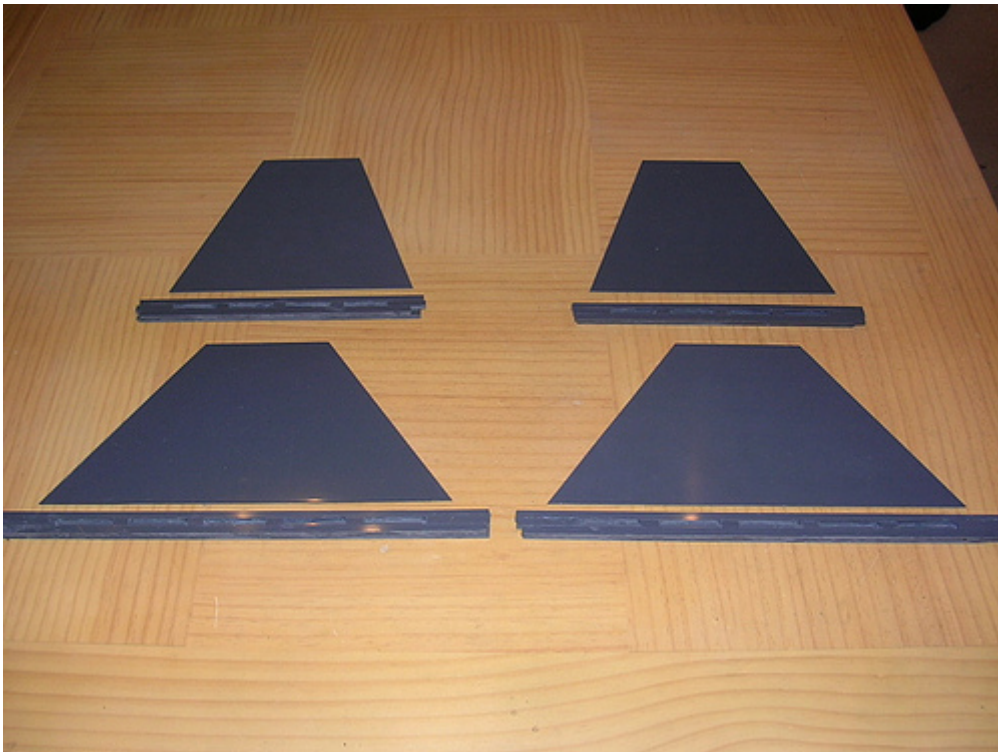
TUESDAY, NOVEMBER 07, 2006

## Glued Side Vent Back Plates, Finished Gluing Center Foot PVC Strips

I glued down the back plates of the side vents with silicone. Will they hold? Only time will tell.



I also finished gluing the strips of PVC for the center foot. Next I need to work on the strips for the outer feet.



*posted by Victor Franco at 11:24 PM* 0 COMMENTS

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WEDNESDAY, NOVEMBER 08, 2006

## Coin Slots Arrive, Started Gluing Outer Foot PVC Strips

Another quality part from Michael McMaster arrived. Today it was the coin slots. I'll need to hack on the frame a bit to get these to fit, but it will be well worth it.



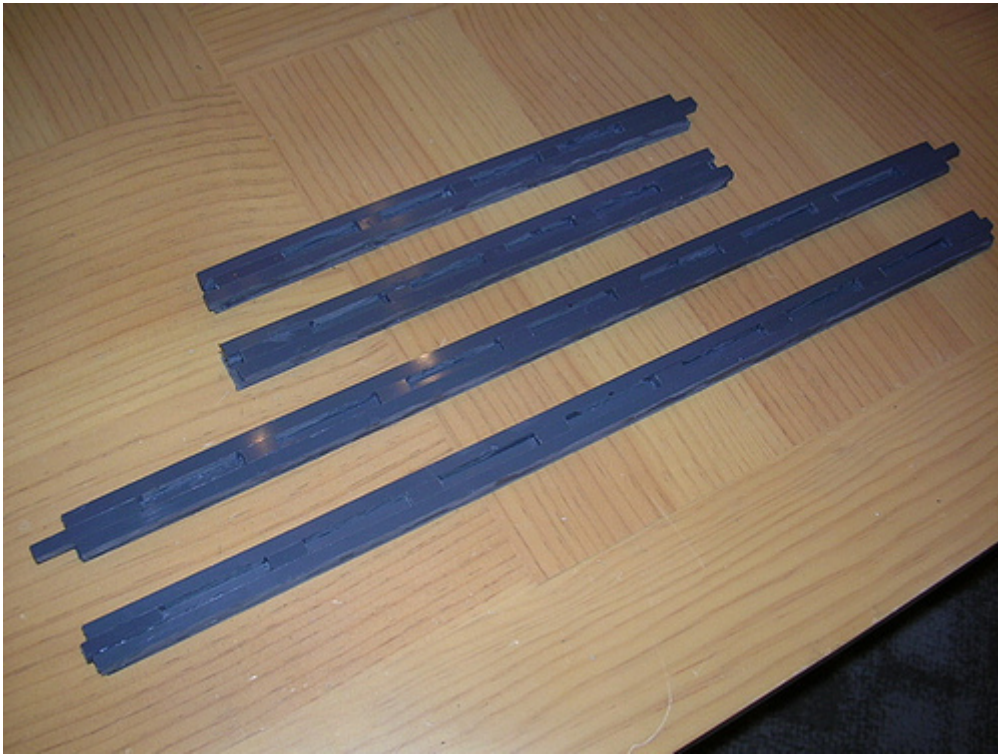
I sawed more PVC strips to size for the outer feet on my workbench/washer/dryer.





Thirty-eight more pieces of PVC were glued together to form the bottom part of one of the outer foot shells. I didn't really realize just how many individual pieces of PVC will make up these foot shells. It will be *a lot*, like 135, not counting internal structure and reinforcements.

Unlike the center foot, I have not yet cut the main side pieces for the outer feet yet, so I had nothing to match these up against.



*posted by Victor Franco at 11:09 PM* 0 COMMENTS

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THURSDAY, NOVEMBER 09, 2006

## Yet More PVC Cutting, Artoo's First Words

Recalling that I am counting-challenged, I realized yesterday I still wasn't done cutting out all the strips of PVC for the bottom of the outer feet. Tonight I finished the cutting of these strips and small pieces (for real). Tomorrow I hope to glue them up.



I decided to do something a bit more fun afterward, and worked on programming sounds for the CFSound III system. (I did this from my Mac Dual G5, btw.) It took a couple of tries to get the .wav file into the format required by the system, but eventually R2 said his [first words](#). The stereo speakers in the background of most of my pictures finally were put to good use!





*posted by Victor Franco at 11:27 PM* 2 COMMENTS

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FRIDAY, NOVEMBER 10, 2006

## **Finished Gluing PVC Strips for Feet**

In a replay of Wednesday night, thirty-eight more pieces of PVC were glued together for the second outer foot.



Hooray! I'm done gluing the strips for all three feet. I think I'm loopy from all the PVC glue.



*posted by Victor Franco at 9:52 PM* 0 COMMENTS

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SATURDAY, NOVEMBER 11, 2006

## Hacked on Frame, Glued Down Side Vents

Time to break out the Dremel again.

There were a few things I wanted to get done today, and though removing the legs is getting to be a bit of a pain, doing so made the job easier.

Today I cut down a couple of the horizontal ribs, in order to accommodate the new aluminum coin returns. There's just enough material left to screw the coin slots down (I think), but for now they are taped in.





I also had to widen some cuts to the frame's base plate, to make room for the rear coin returns. Back on May 4 of this year I had cut the frame for the same purpose, but I didn't realize that I had reversed the left and right returns. Now that I've fixed that, I had to gouge out some more material.



Finally, I used silicone to glue down the side vents. I'll let this set for a few days and then remove the tape. With the side vents in place, it will be a real pain to ever remove the skins again (even more so), since they go across the seams.



*posted by Victor Franco at 8:42 PM* 0 COMMENTS

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SUNDAY, NOVEMBER 12, 2006

## Center Foot Doors Cut Out

Time to cut the doors out of the center foot's sides. The doors will be removable on all three feet to allow access inside the shells without having to take the feet entirely off the droid.

It was all Mike today. Mike removed the door from his first R2's center foot, and he used it as a template to mark lines on the PVC to guide the cutout on the sides of the center foot.

Mike then used the Dremel tile cutting attachment to route out the doors. A straight edge from a wooden board guided the straight cuts. The curved corners were done freehand.





I'll sand the PVC crumbs off, and then the center foot will be ready for glue-up!



This took pretty much the whole afternoon. Once again I am very indebted to Mike.

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*posted by Victor Franco at 10:11 PM* 0 COMMENTS

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MONDAY, NOVEMBER 13, 2006

## Adjusted Center Ankle Cylinder

Back on [September 1](#) and [September 2](#) I installed the ankle cylinders. One of the cylinders on the center leg and the cylinder on the left leg never sat quite right. With the legs off now, I was able to fix the center leg tonight, I'll try for the left leg tomorrow night.

What about the feet? Mike said to hold off on those, he's checking the width of the groove that was cut yesterday.

I also played around with the sound system a bit more tonight.

*posted by Victor Franco at 10:48 PM* 0 COMMENTS

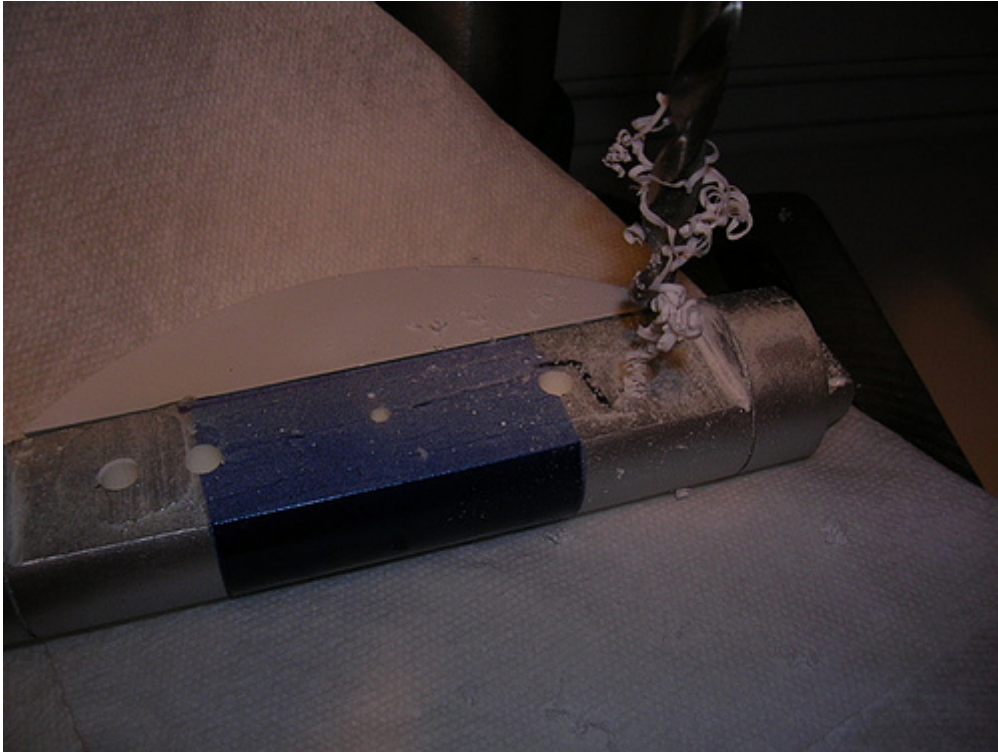
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TUESDAY, NOVEMBER 14, 2006

## Reseated Ankle Cylinder on Left Leg

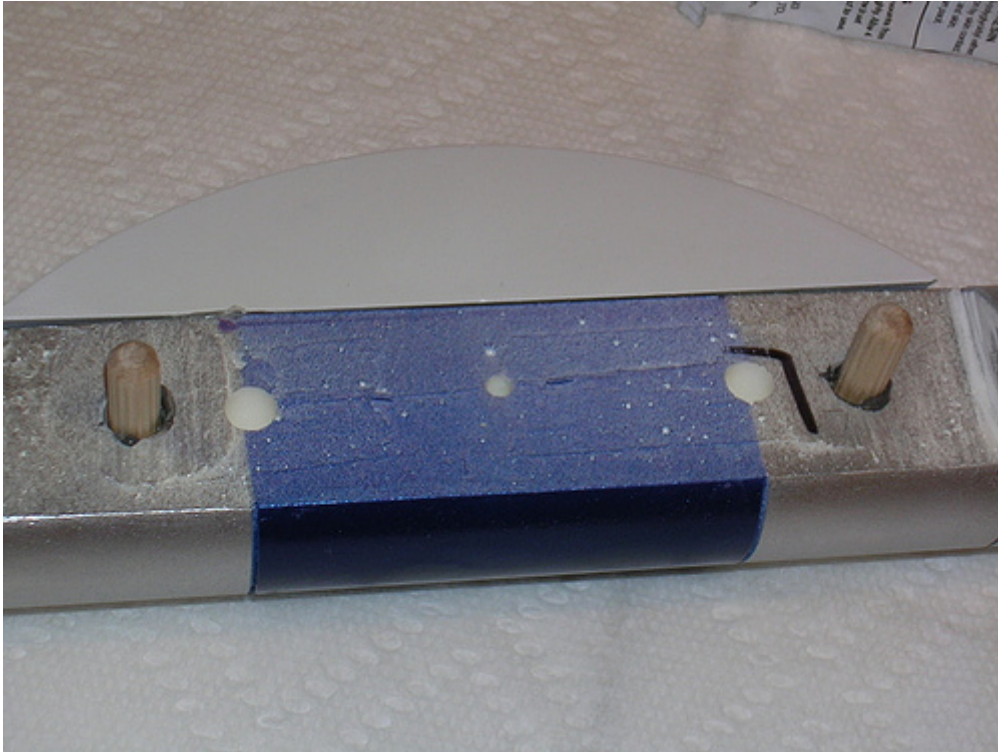
Tonight I fixed the left ankle cylinder that had been sitting improperly on the leg, not allowing the cylinder wedge to rest against both the cylinder and the leg.

First I widened the previously drilled holes. Original holes were 1/4" in diameter, I widened them to 5/16". Note that there were already two pairs of holes in the cylinder from my first go-around. I can't even remember why now, but it was probably an error.

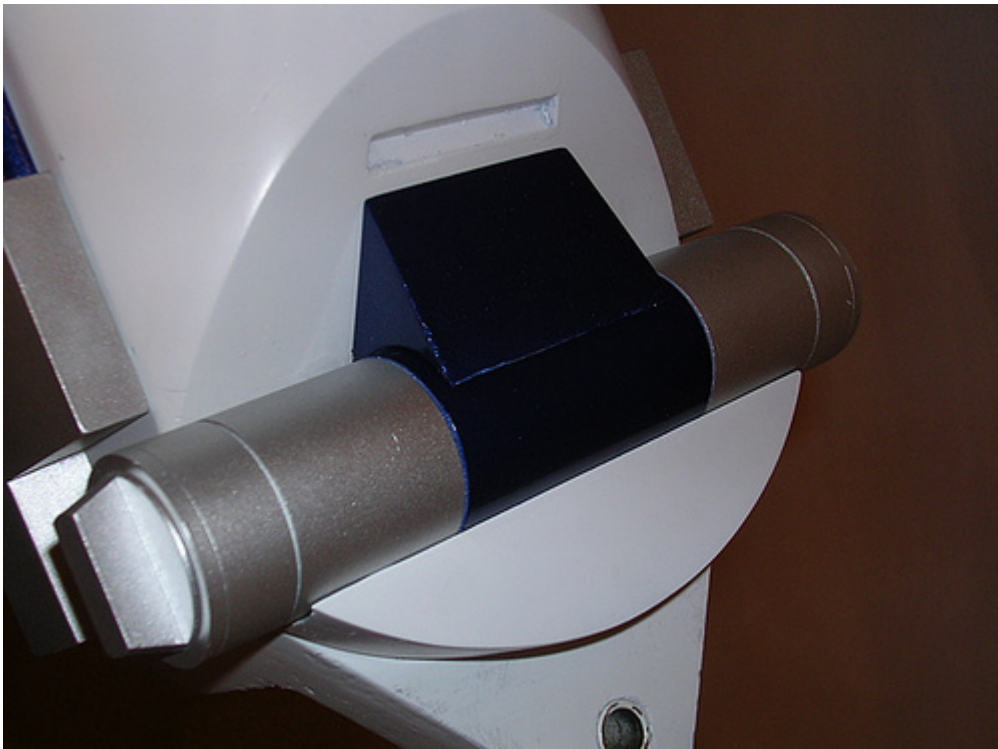


Next I globbed some JB Weld onto the 1" long, 1/4" diameter wooden dowels, and shoved them back into the widened holes. This gives them some room to wiggle when I attach this to the matching 1/4" diameter holes in the leg. The JB Weld will dry overnight, locking the dowels into the proper position in the widened hole. That's the theory, at least.





Now the cylinder wedge is rests on the leg and cylinder just like it should. I may need to detach and reglue the cylinder holder to the bottom of the cylinder, since the cylinder moved a bit and now there's a small gap between the cylinder holder and the leg.



*posted by Victor Franco at 10:49 PM* 0 COMMENTS

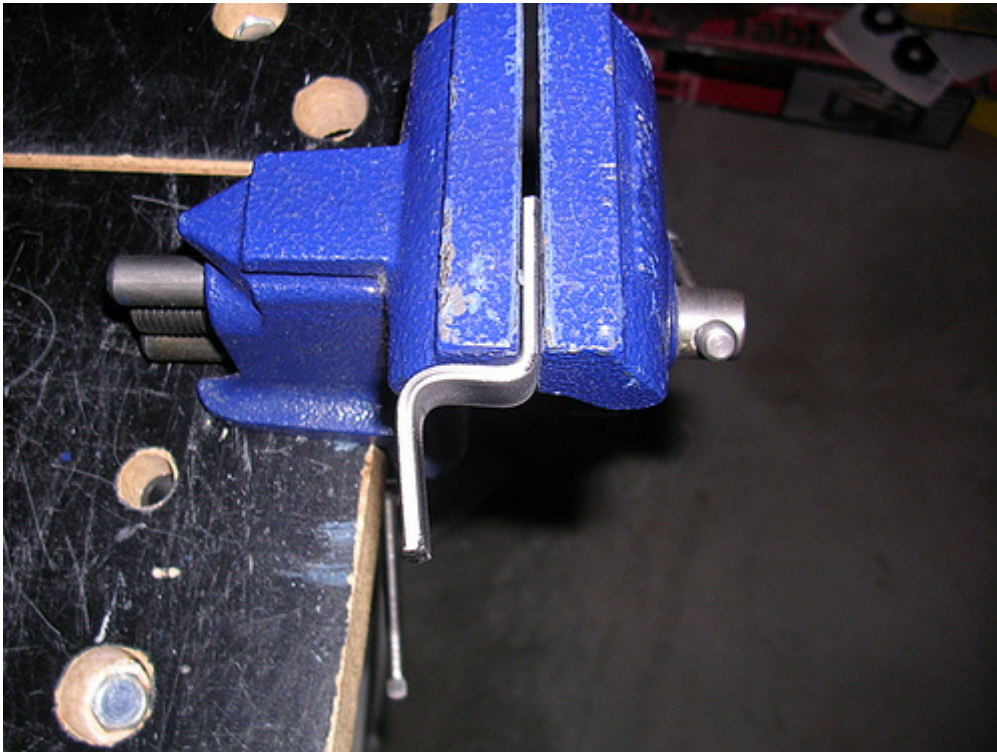
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WEDNESDAY, NOVEMBER 15, 2006

## Reglued Left Cylinder Wedge, Secured Coin Slots & Front Power Coupler

This morning I used silicone to reglue the cylinder wedge on the left leg to the newly reseated cylinder.

In the evening I worked on securing the coin slots in place. Not having enough wood left for screws to dig into, I decided to bend some metal bar into an 'S' shape.

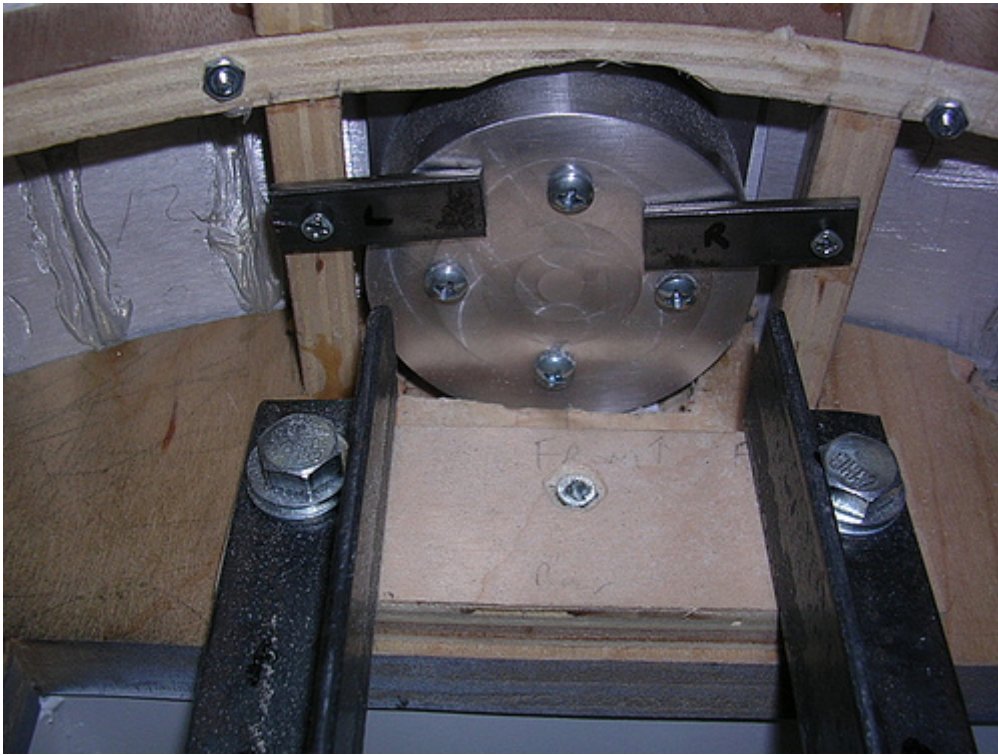


Then I screwed the bar onto the frame, thus pressing the coin slots in place.



That worked pretty well, so I applied the same idea to the front power coupler, which until now had been held in from behind by the high-tech solution of wadded newspaper.





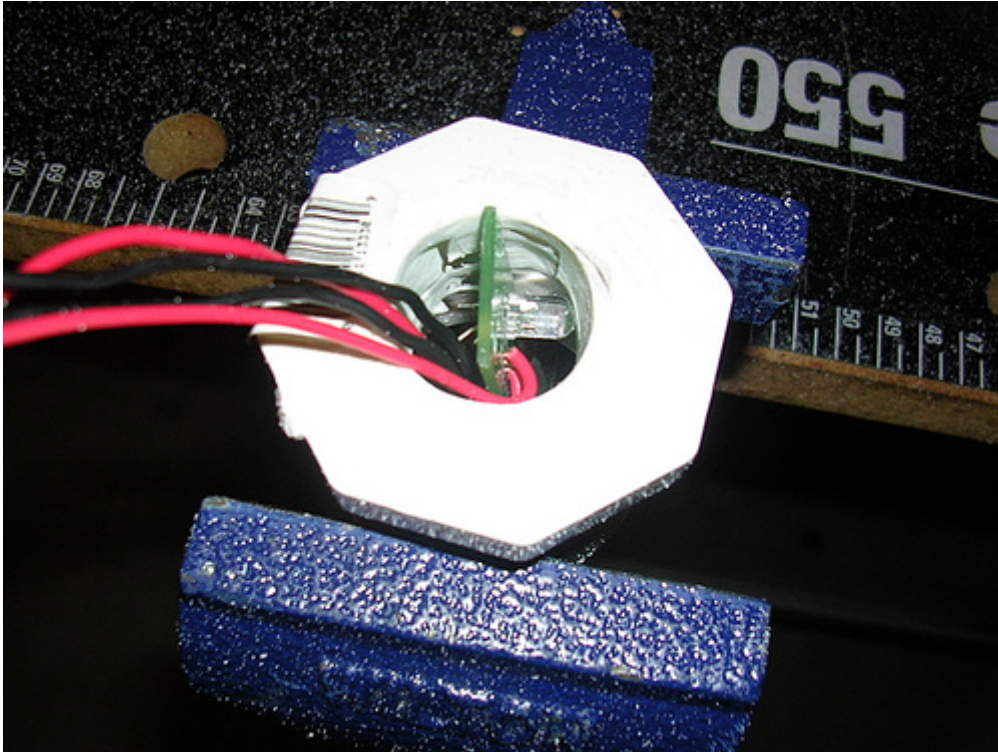
*posted by Victor Franco at 8:43 PM* 2 COMMENTS

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THURSDAY, NOVEMBER 16, 2006

## **Dremeled PSI Holders, Drilled Screws for Shoulder Hubs**

I'm planning to (at least) partially rewire my dome, since there's a tangled mess of wires in there. Before I start to solder, I wanted to make sure I could get the small PSI LED boards through the holes in the PVC into which they mount. I had to widen the holes a bit with the Dremel drum sander. Now the small boards fit through the holes.



I'm also trying to take care of as many outstanding issues with the legs as possible, while they are still off the droid.

The shoulder hubs are going to be held in place with rare earth magnets, which will be attracted to nuts behind the shoulder hubs. The right leg already has nuts and bolts in the correct location for this to work, but the left leg has the nuts and bolts spaced too far apart for the back of the shoulder hub to hit it. This is because the gas pipe holder on the left leg is larger than that of the right, since the right leg's 3/4" gas pipe fits into the left leg's 1" gas pipe.

The gist of all this is that I needed to drill four new holes in the left leg's backing plate, and screw down four nuts that will meet up with the left shoulder hub's magnet.

First I took the assembly apart. The gas pipe is JB Welded into the gas pipe holder, but everything else can come off.



Next, I marked and drilled the backing plate.





Then I put everything back together, with four new nuts in place. Soon I will install the magnets in the back of the shoulder hubs.



*posted by Victor Franco at 10:29 PM* 0 COMMENTS

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FRIDAY, NOVEMBER 17, 2006

## Back on Three Legs Again

I didn't get much done tonight other than put R2 back together.

I had been working on a number of minor adjustments during the week, including cylinder placement, aluminum coin slot and front power coupler installation, Dremeling of the frame, and other fun stuff. Additionally, I finally removed the blue tape from the side vents, and they seem to be holding securely.

It's kind of depressing to see R2 in many pieces, scattered about. I was glad to get him back together.



*posted by Victor Franco at 11:44 PM* 0 COMMENTS

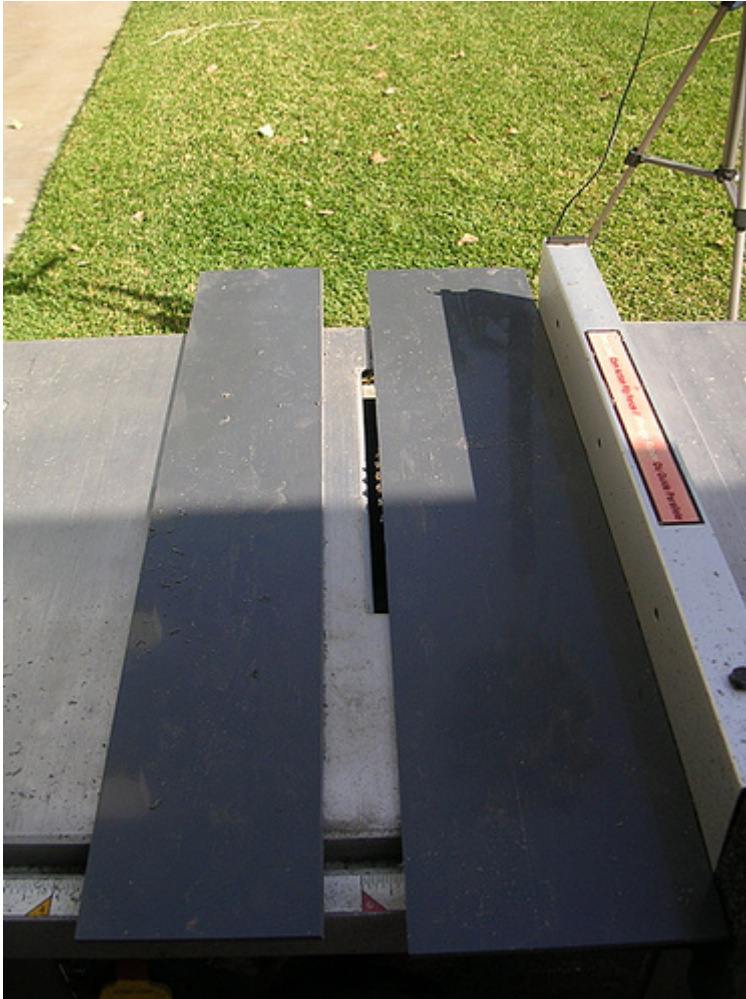
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SATURDAY, NOVEMBER 18, 2006

## Started Cutting Side Pieces for Outer Foot Shells

I went back to Mike's today to continue working on foot shells. I actually did all the cutting this time(!).

The outboard sides of the foot shells will be about 5.1" tall, with an 18 degree beveled edge at the top and bottom. So I tilted the saw blade 18 degrees and cut some PVC to be about 5.1" tall.



The building day was cut short for reasons that should be divulged by Monday. In the meantime, we are in for a lot of driving in the next 24 hours or so...

*posted by Victor Franco at 2:18 PM* [0 COMMENTS](#)

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MONDAY, NOVEMBER 20, 2006

## Bay Area Road Trip

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Well, this was about as spur-of-the-moment as you can get. One minute I'm cutting PVC in Mike's backyard, the next we're packing his R2 into the van and climbing in for a 438 mile/7 hour-15 minute road trip each way, all in about 24 hours.

We were hoping to join fellow R2 Builders Saturday evening in time for dinner with Don Bies, but alas, we were just a bit late. Still, there was time to clown around near midnight in the parking lot at the local Chevy's, in Novato, north of San Francisco.



Sunday we visited the new Lucasfilm headquarters at the Presidio in San Francisco. My brother Jonathan, who lives in nearby Berkeley, was able to join in the merriment. Michael McMaster's son Kory was our C-3PO, while Mike Senna's R2 completed the pose.



Mike and I headed back to Southern California in the late afternoon. By nightfall, very heavy fog set in, so I didn't get home until after 12:30am Monday morning (and then I stayed up and typed this!).

Just another crazy adventure in droid building (that has little to do with actual droid building).

*posted by Victor Franco at 12:56 AM* [3 COMMENTS](#)

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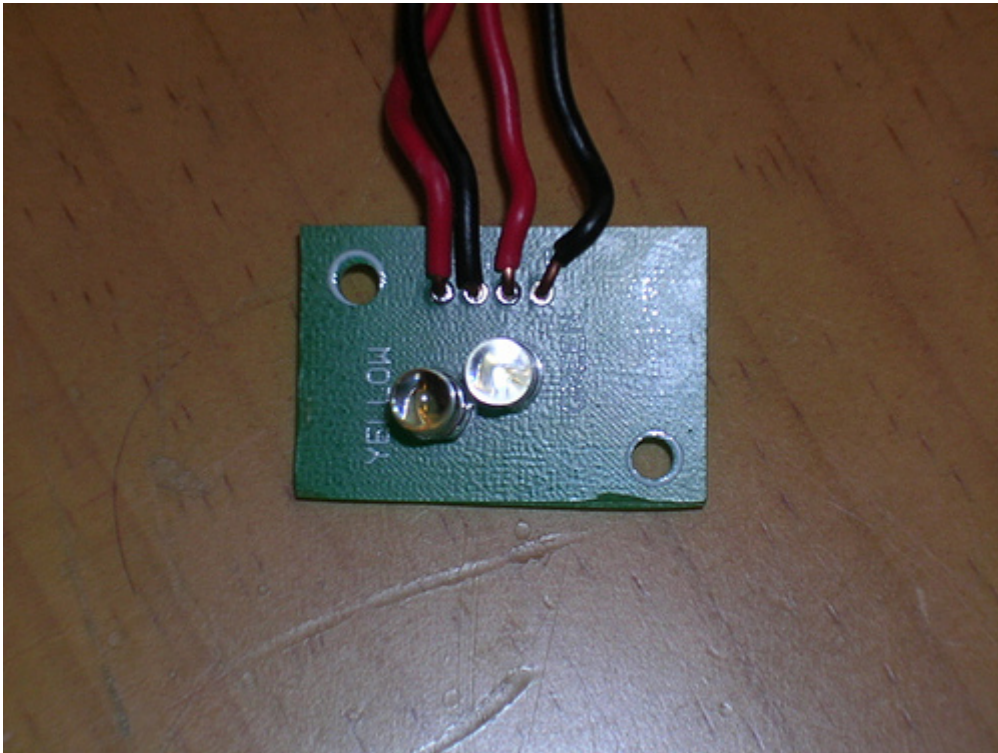
TUESDAY, NOVEMBER 21, 2006

## Fried Yellow PSI LED

Dang. Whatever the opposite of R2-building is, that's what I did tonight.

I was planning to redo my dome wiring this evening. Somehow, some way, I managed to burn up my yellow PSI LED. I really have no idea what went wrong. I was testing the wiring, and I heard a bad sizzle noise as the LED got really bright (and then went permanently dark), culminating with the smell of a burnt electrical component. Quite a sensory experience.

Luckily I have an extra PSI board with extra LEDs. Still, I need to get a replacement sooner or later. Bottom line: If the LED has a yellow tint when there is no power to it, that's a bad sign.



*posted by Victor Franco at 9:59 PM* 0 COMMENTS

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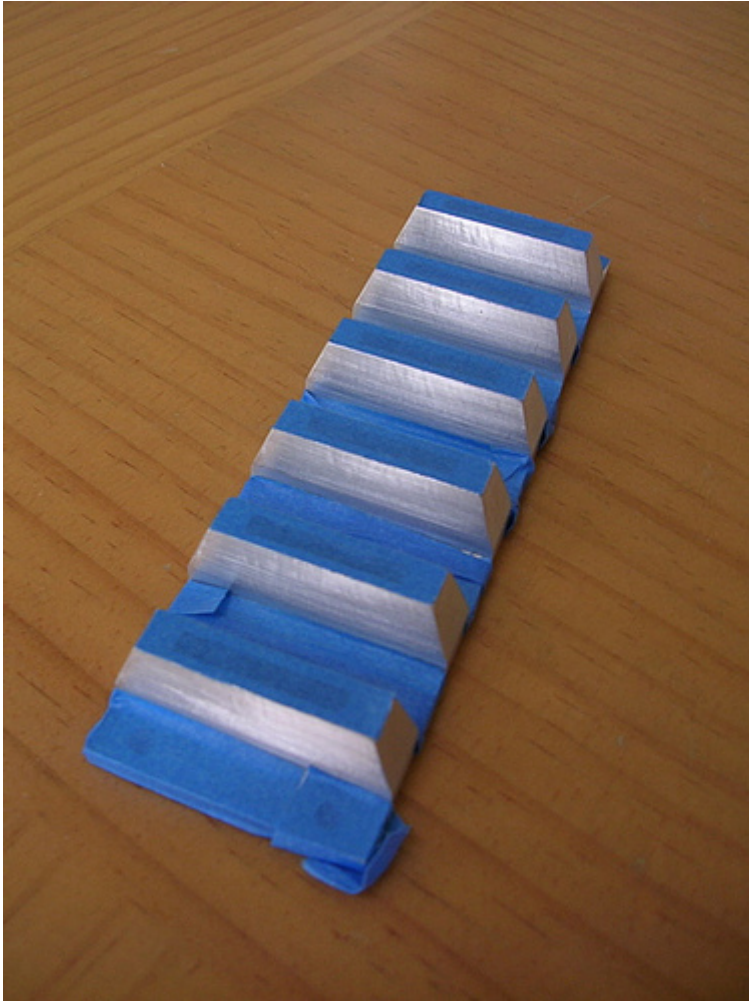
WEDNESDAY, NOVEMBER 22, 2006

## **Painted Coin Slots, Sanded Center Foot Doors, Rewired PSIs**

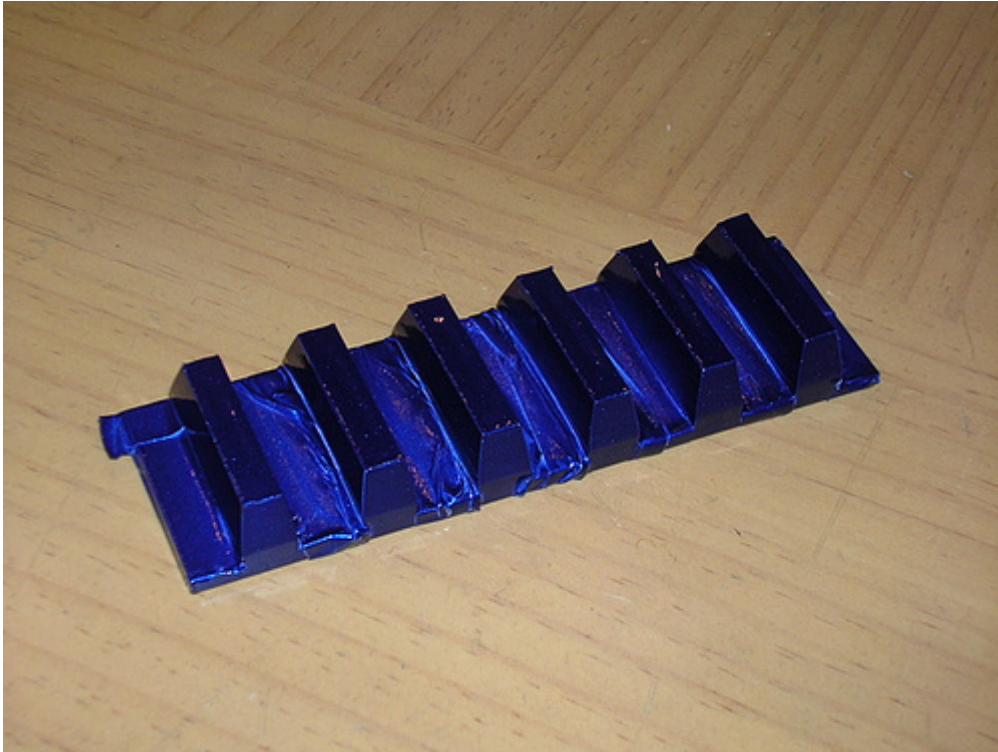
Thanks to a day of vacation, I was able to get a few things done.

I started off by painting the coin slots with the usual Krider formula. I carefully masked the front face of each slot, along with most of the base.



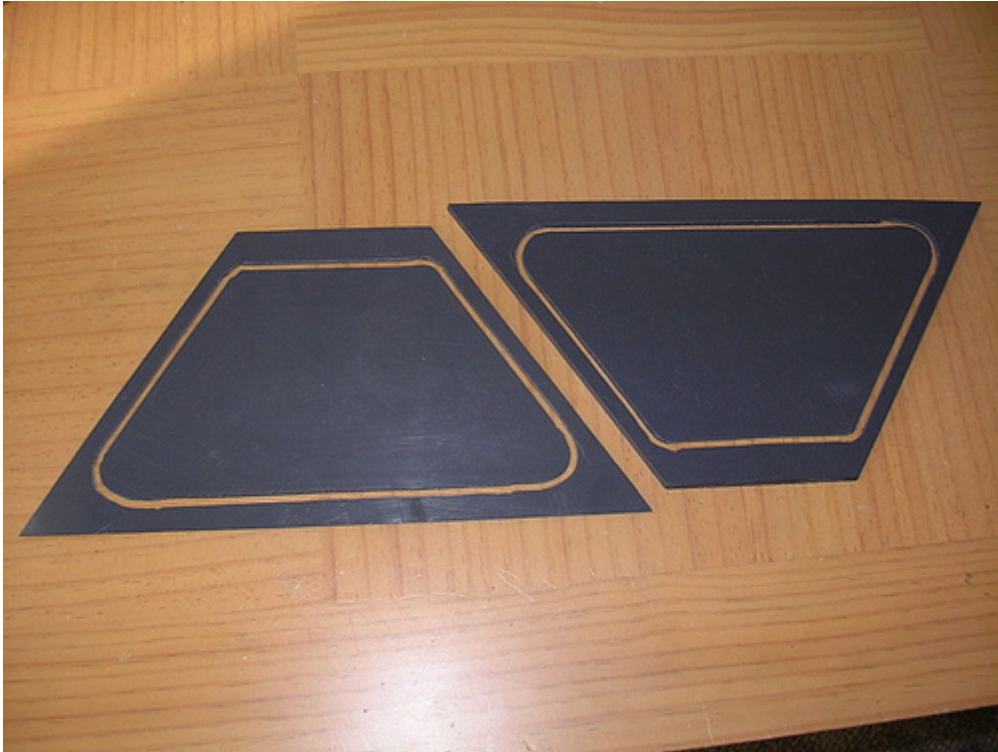


I'll let this dry for at least 24 hours before removing the tape. I certainly don't want to peel off any of the paint, so I'll have to go slowly and carefully.

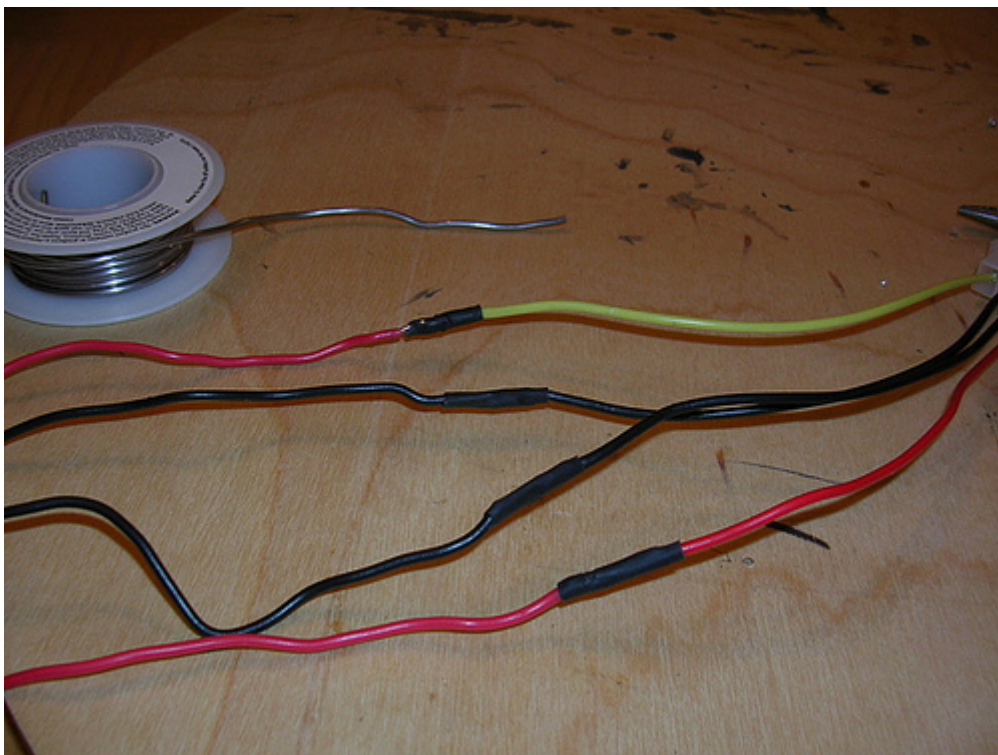


Next, I sanded the PVC crumbs from the doors of the center foot. There is some slight unevenness in the groove, but that should be fixable, if necessary.

The center foot shell is ready for gluing. I just need to psych myself up for it. It really shouldn't be that big of a deal.



Finally, I redid the wiring for the PSIs. The first thing I did was swap out the yellow LED that I burned out yesterday. Then I undid all the wiring, and resoldered and used shrink tubing to get better connections.





The PSIs seem a little brighter to me, which is good. I suspect I had a voltage drop due to poor connections earlier.



Next up, rewiring the front logics.

*posted by Victor Franco at 11:24 PM* 0 COMMENTS

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FRIDAY, NOVEMBER 24, 2006

## Started Rewiring Front Logics, Unmasked and Installed Coin Slots

Not much is getting done so far this holiday weekend.

Last night I spent a few minutes resoldering and rewiring the front logics. These new connections are much more reliable, no more random loss of power.

Today I simply removed the masking tape from the coin slots, and reinstalled them in the body.



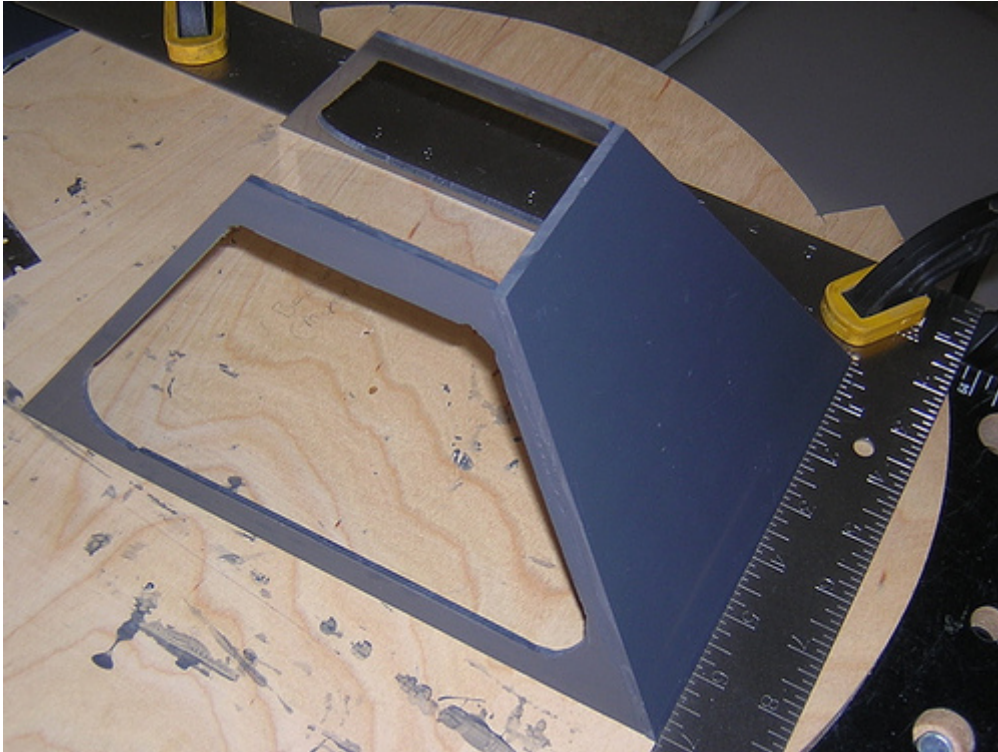
*posted by Victor Franco at 9:42 PM* [0 COMMENTS](#)

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SATURDAY, NOVEMBER 25, 2006

## **Glued Together Center Foot Shell, Drilled Shoulder Hubs for Magnets**

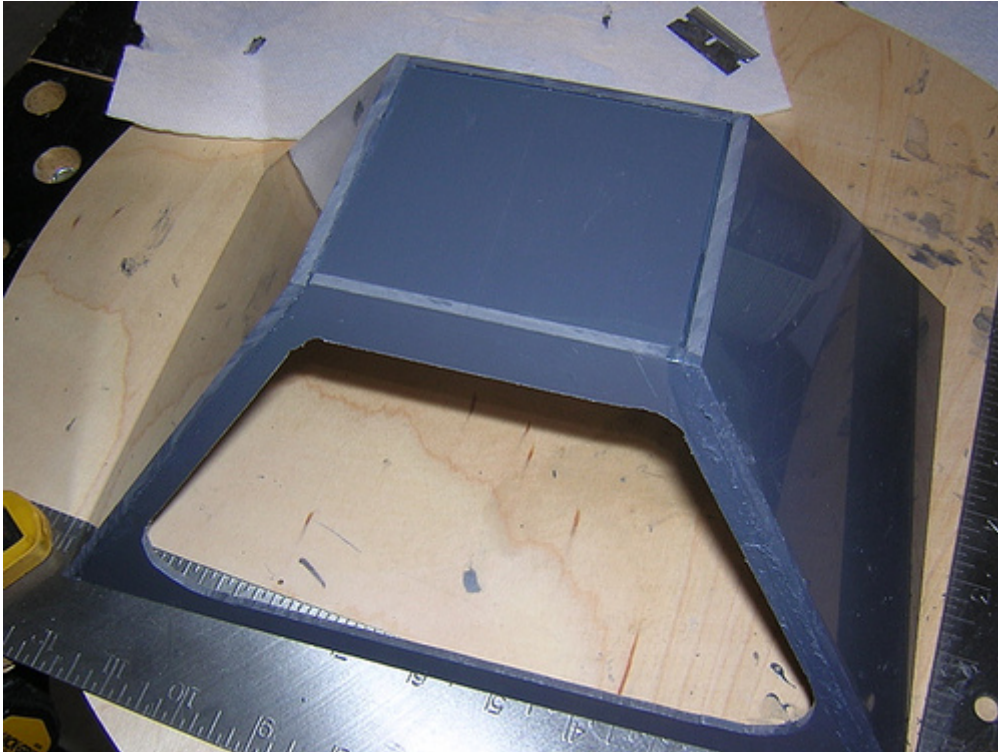
I finally got around to gluing up the PVC center foot shell. I glued each side one at a time.



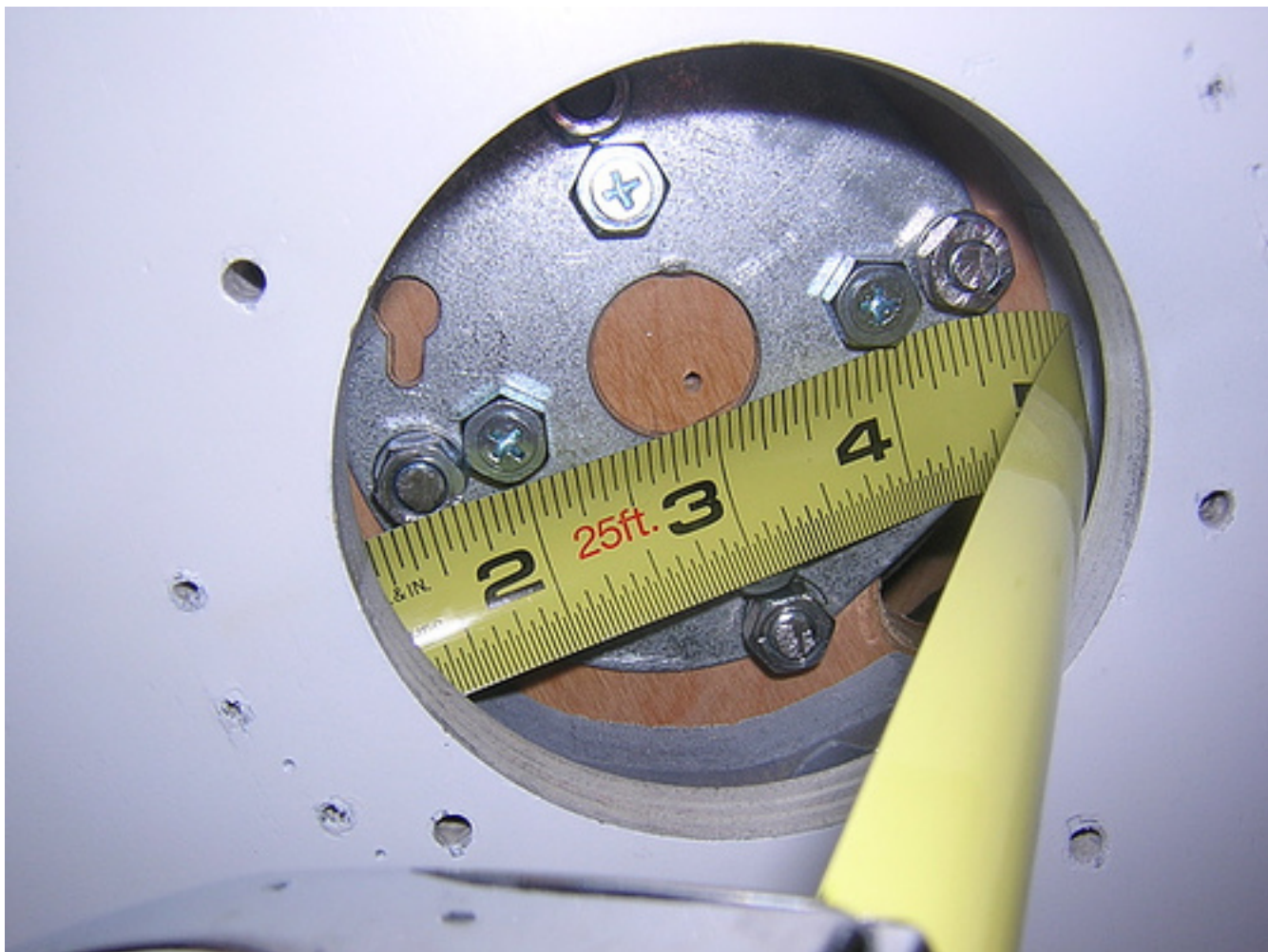
The four sides and the top are now glued together, but there is still a lot left to do.

For starters, I still need to cut the PVC foot strips that go on the bottom to size, and then glue them on. I also need to do some finishing work on the shells to smooth out the rough edges, and sand down the top edges a bit so that the top is perfectly flat. I also need to do a bit of filling of gaps in the top. These are all to be expected, and I'll get to them over time.





I'm using rare earth magnets (which are *very* strong) to keep the shoulder hubs in place. The magnets will be attracted to nuts and screws in the shoulder itself. I installed extra dummy screws and nuts into the shoulder disc the other day, so that the magnets would have something to grab onto.



I marked the location on the shoulder hubs where the magnets should go, and drilled the holes for them.



Finally, I glued the magnets in place. My only worry is that the magnets will be stronger than the glue, and when I pull the shoulder hub out, the magnets will stay in the body! Let's hope not...





*posted by Victor Franco at 10:20 PM* 0 COMMENTS

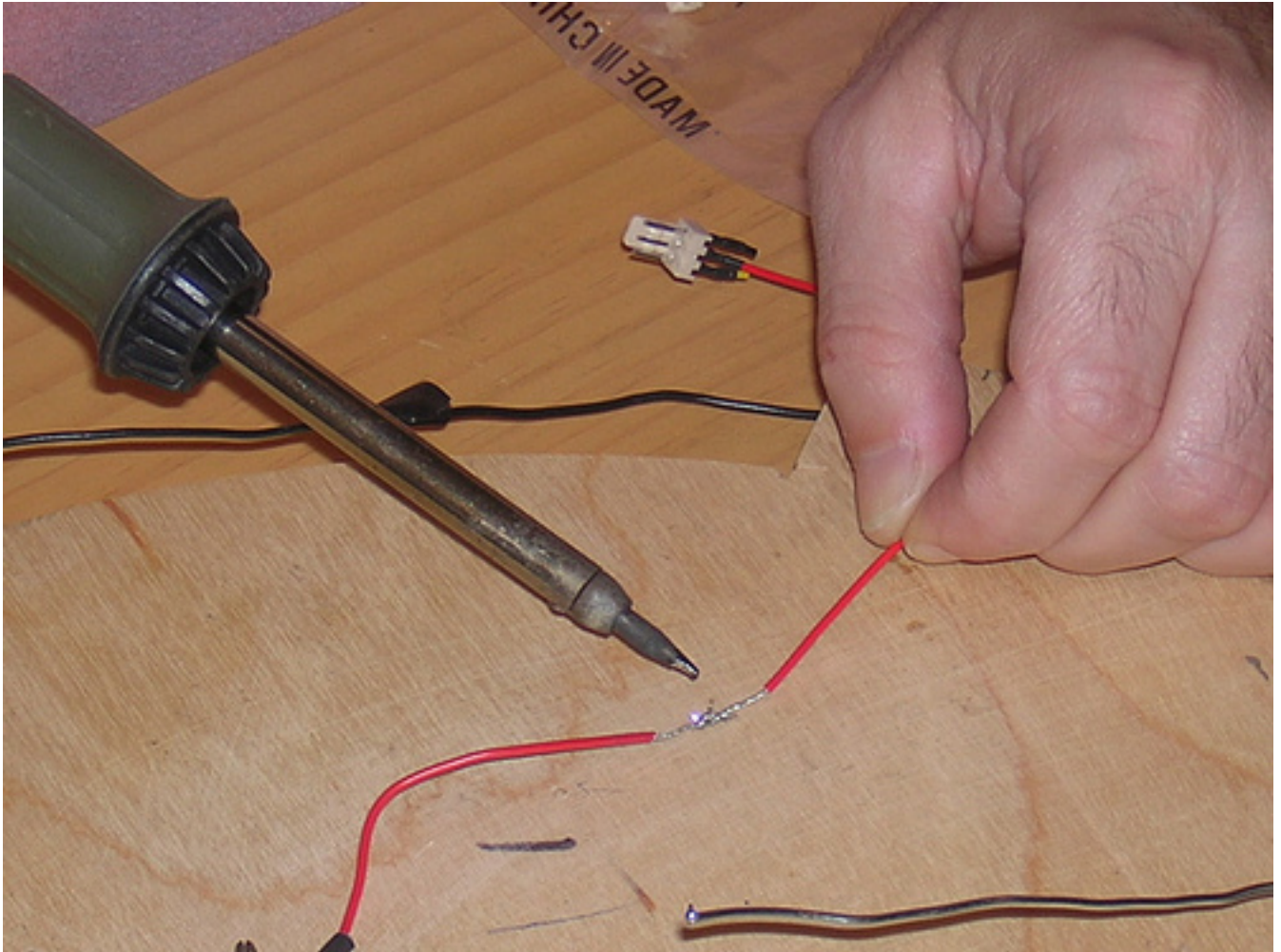
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SUNDAY, NOVEMBER 26, 2006

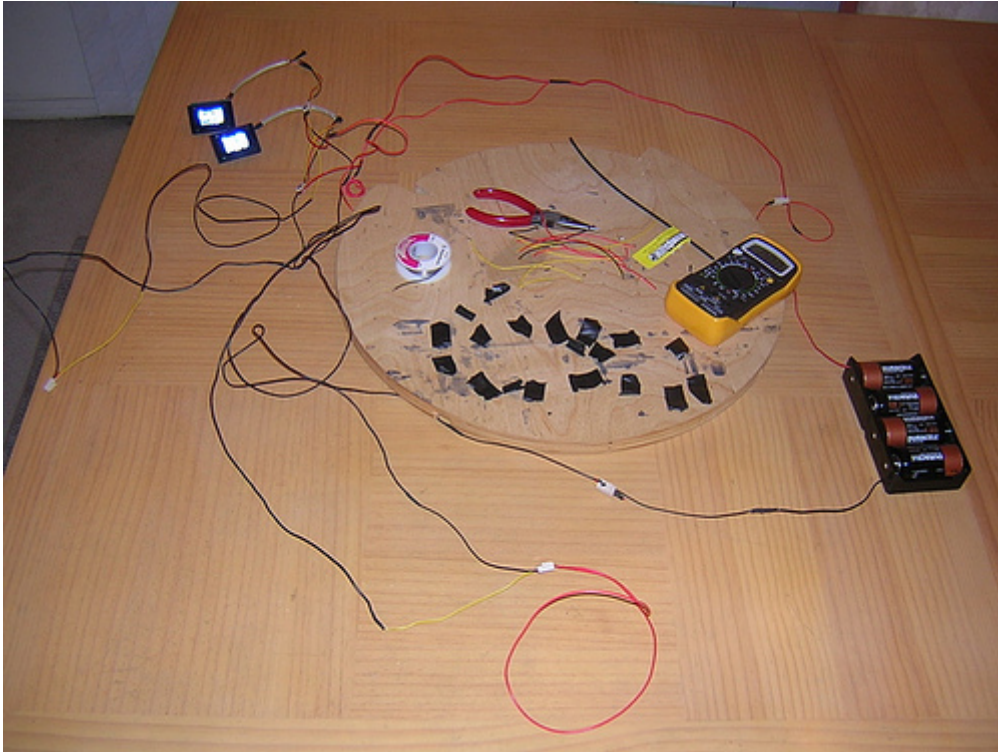
## Finished Dome Rewiring

I spent some time tonight completing the dome rewiring.

Seven miles, er, feet, of wire had been held together by twisting and using electrical tape, with predictable (i.e. unreliable) results. I had done that as a rush-job for R2LA IV. So one by one, I undid the old connection, soldered a new one, and used shrink tubing to hold each connection together. There were about 20 reworked points of contact in all.



Once I was done, I had to test at least part of the circuit. Both Front Logic displays worked perfectly, so that's a good sign. I could even jiggle the wires pretty hard with no loss of power. I'll get this all back into the dome soon, hopefully much more neatly this time.



By the way, good news with my shoulder hub magnets from yesterday. The glue is holding, and the magnets are doing their job.

*posted by Victor Franco at 11:16 PM* [0 COMMENTS](#)

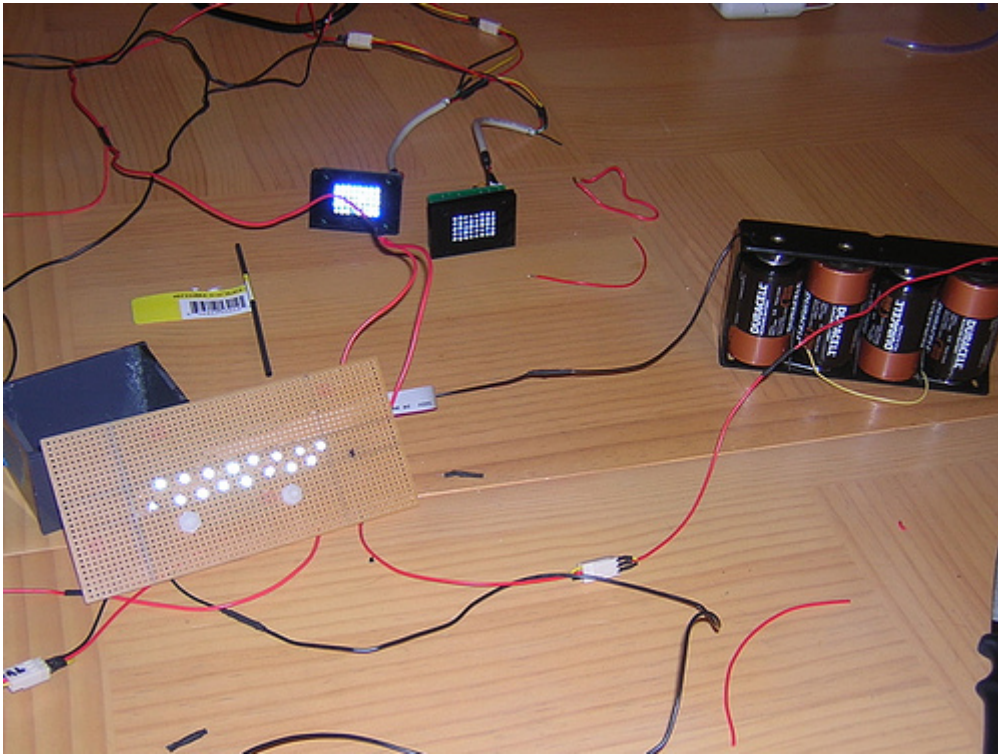
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MONDAY, NOVEMBER 27, 2006

## Added Rear Logic Wiring

Whoops, not so fast. Um, I kind of neglected to include the rear logics in yesterday's wiring. Since I'm not 100% done with the rear logics, it was a case of out-of-sight-out-of-mind. So I fixed that tonight.





*posted by Victor Franco at 10:49 PM* 0 COMMENTS

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TUESDAY, NOVEMBER 28, 2006

## Redid PSI Diffusion

Once again I didn't get a whole lot done, but this needed doing.

The original plastic I was using for the inner part of my PSIs was showing LED hot spots, so I went to Home Depot a couple of weeks ago and purchased a new plastic sheet that is bumpy on one side and flat on the other. There is a second piece of plastic over the hole in the dome to help further redirect the offending photons.

The new plastic does seem to work somewhat better. It's not perfect, but nothing I do ever is.



*posted by Victor Franco at 10:12 PM* 0 COMMENTS

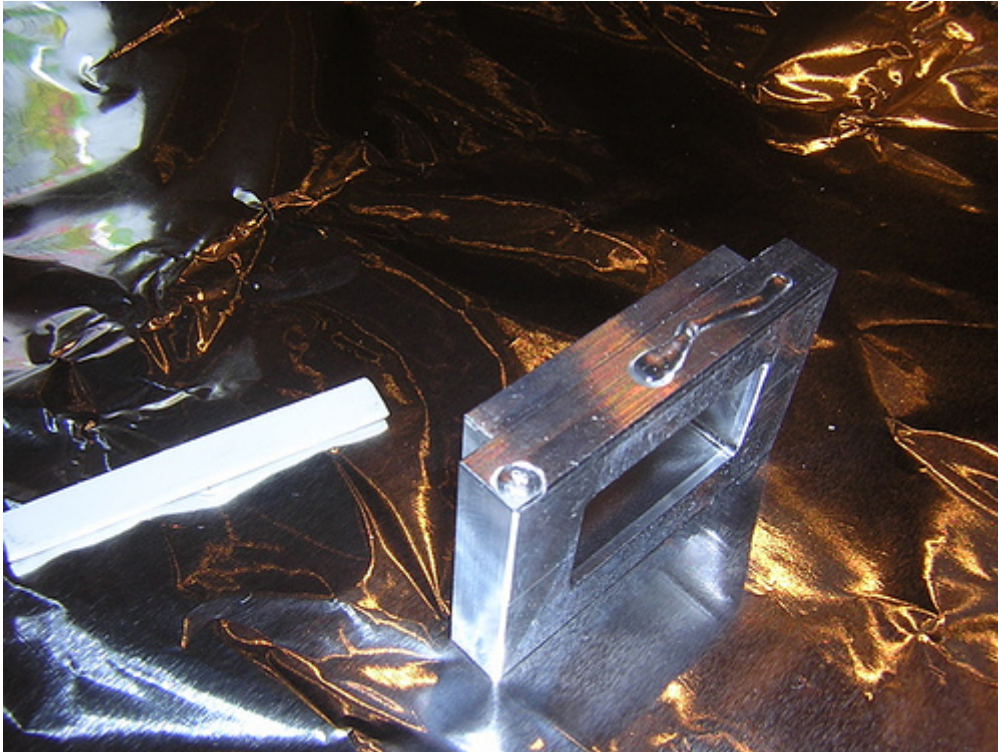
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WEDNESDAY, NOVEMBER 29, 2006

### **Worked on Fitting Front Logics**

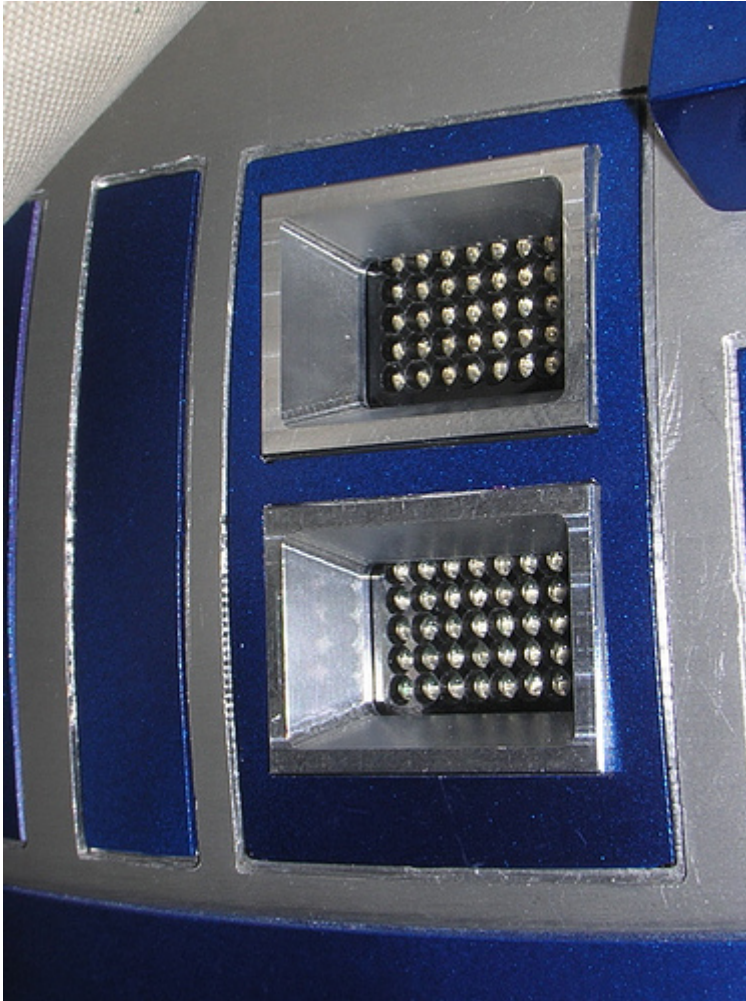
Tonight I started working on getting the front logics to fit properly into the dome. They will be held in from behind by a box made out of PVC.

The first step was to get the aluminum surrounds properly spaced apart. I cut a small piece of styrene, and super-glued it to the edge of one of the two surrounds.



Once the glue had dried, I retested the fitting that I had done prior to gluing the styrene. The surrounds seem to be spaced apart just right. I loosely placed the bezels and logic boards behind them. Until they are secured, they don't line up perfectly.

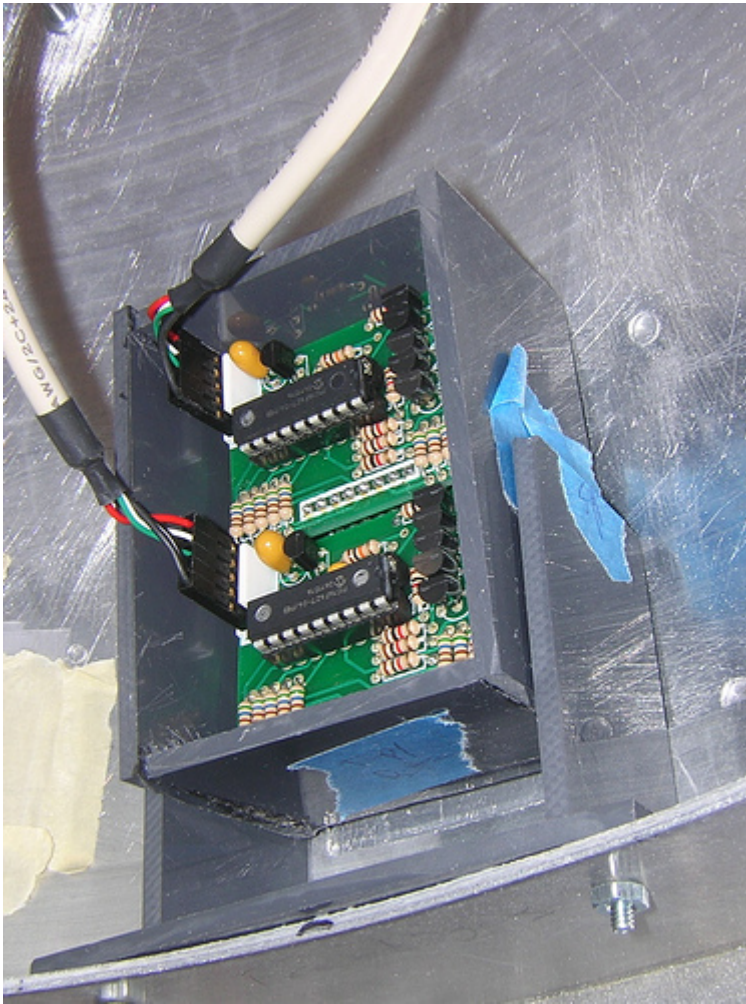




On a view from inside the dome, the PVC box will be attached via flat PVC "legs" to another flat piece of PVC that will be screwed down on the dome ring. Right now the PVC legs are just taped in place.

There will be little sticks of PVC glued to the inside of the box, to force the logic boards into position. The only way to remove the assembly will be to unscrew it from the dome ring, and remove everything out of the front side (which is fine with me).

By the way, I found the 5-pin connectors for the front logics at a local Fry's Electronics. They were for connecting USB ports to a PC motherboard. One end had standard USB connectors, the other had these five pin connectors.



*posted by Victor Franco at 10:32 PM* 0 COMMENTS

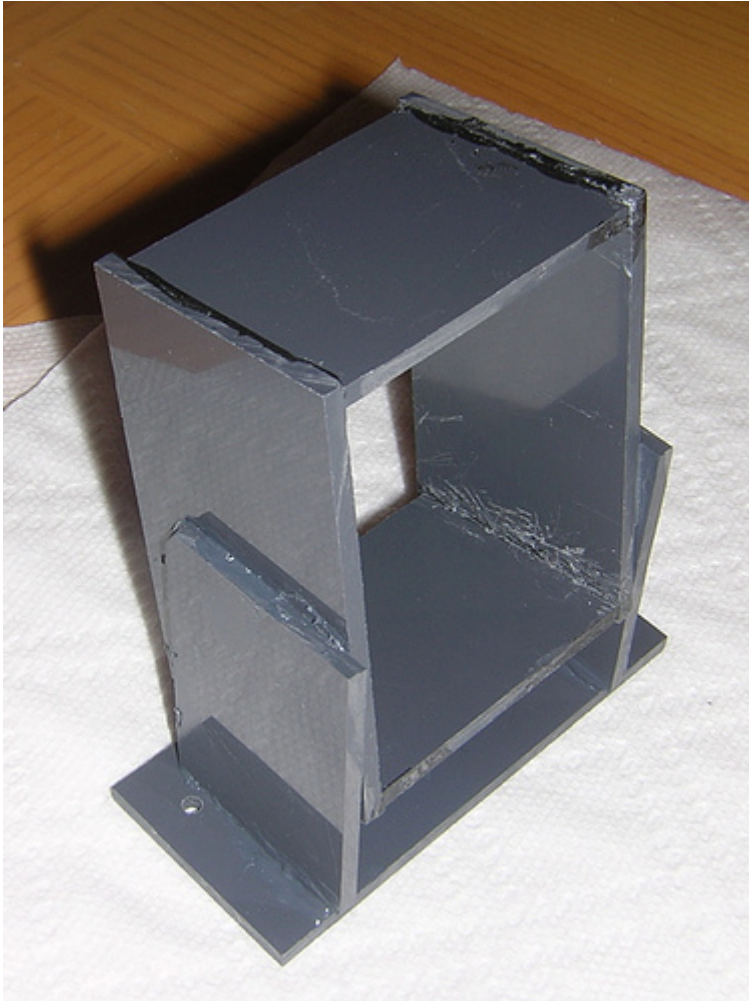
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THURSDAY, NOVEMBER 30, 2006

## **Finished Installing Front Logics**

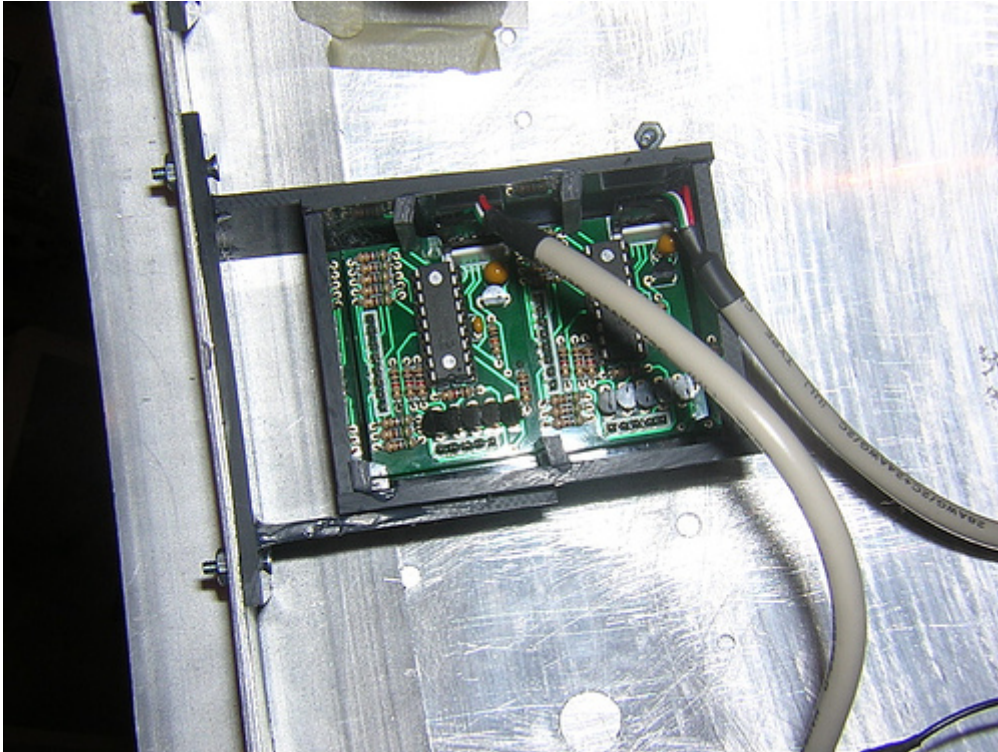
Tonight I was able to finish up the work I started last night.

I fitted the PVC legs to the PVC front logic box in the dome, and glued it all together.

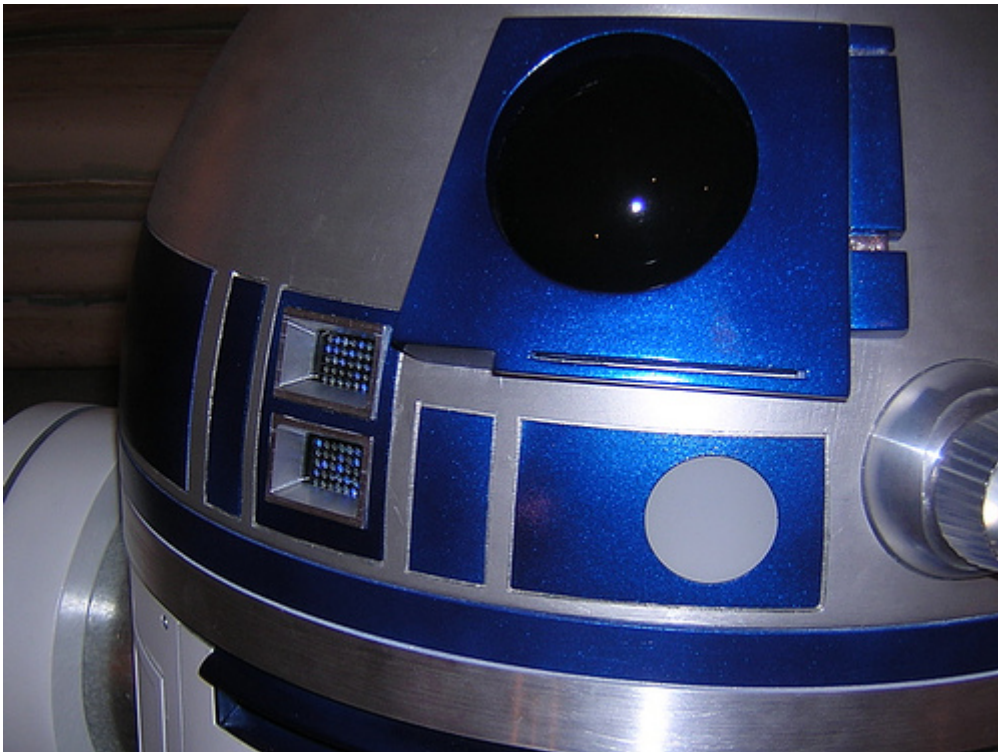


Next, I made five sticks from short pieces of PVC, and glued them in place to force the front logic boards, bezels and surrounds forward in the dome. (One of the sticks is obscured in the photo by the cable.)





The logics look pretty good from outside. I might do a micro-tweak to bring the bottom surround out a bit more, but otherwise it's good to go.



*posted by Victor Franco at 10:35 PM* 0 COMMENTS

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SATURDAY, DECEMBER 02, 2006

## Started Installing Rear Logics

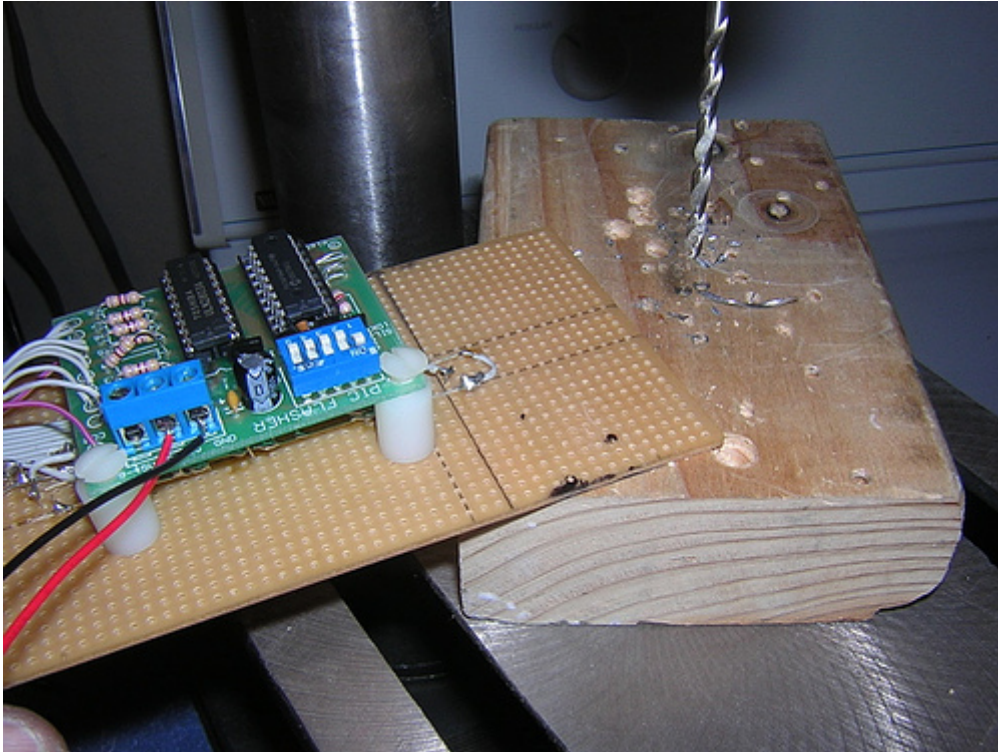
Today was somewhat a replay of [October 30th](#) of this year. I never was able to get the rear logics to fit properly in the dome on my first go-around about a month ago, so I gave it another try today.

I recut and bent a couple of short pieces of metal bar. These will be screwed down to the dome ring, and the rear logics will screw onto the other end.

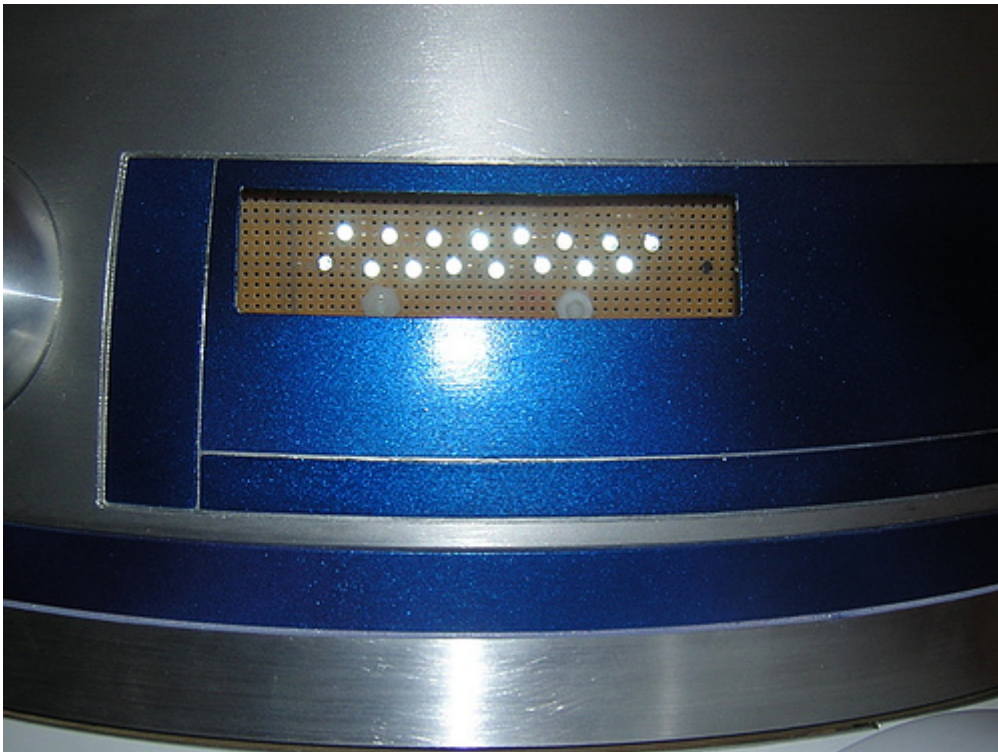


Next, I drilled holes in the perf board to mount it onto the bent bars.





Then I was able to get it all installed in the dome and try it out. For the first time, all the dome electronics were wired up and running in the dome.



Recall that the plan for this version of my rear logics is to fake the 108 LEDs with



some transparencies with a pattern of LEDs printed on them (pattern by Kelly Krider, if I'm not mistaken). I still need to put that together. The other issue I have is that neither my resin nor my aluminum rear logic surrounds fit in the dome hole, so something is going to have to give.

*posted by Victor Franco at 10:12 PM* 0 COMMENTS

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SUNDAY, DECEMBER 03, 2006

## Continued Work on Outer Foot Shells

More cuttin' and choppin' today, after a couple of weeks away from the PVC foot shells. Today we picked up where we left off on the outer feet.

One of the areas of the outer feet has a curve to it, to fit the battery boxes. Mike's solution was to use a quarter section of a PVC pipe.

First, the PVC pipe was cut to approximate length at Mike's.



Next, it was over to Greg Schultz' house, where Greg graciously let us use his band saw.

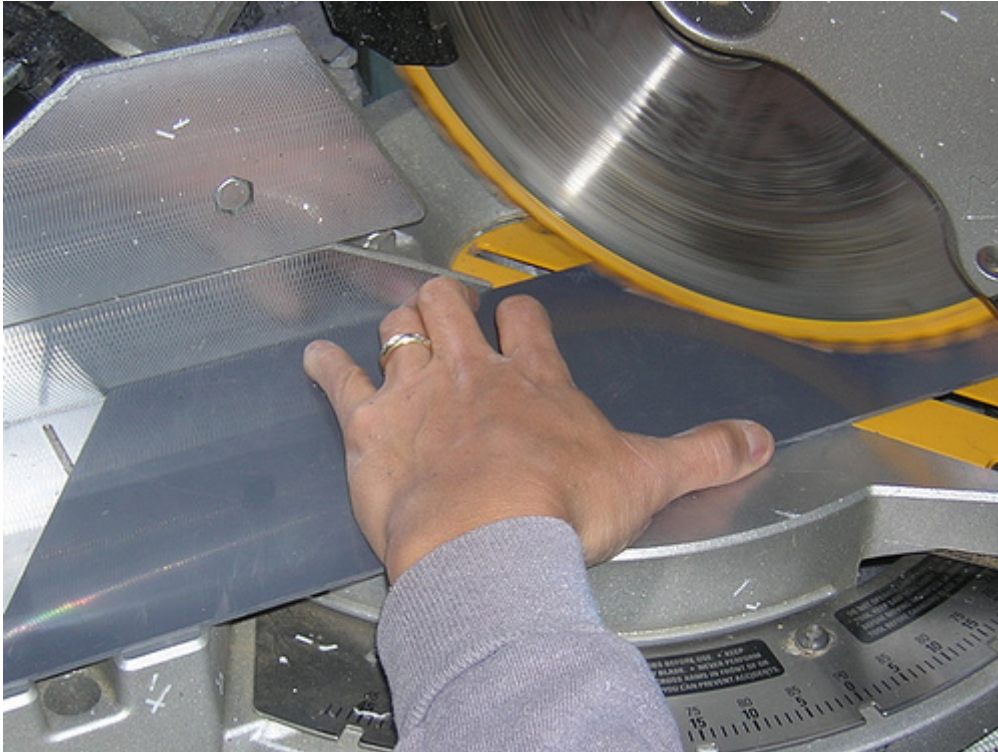


While we had access to the band saw, we figured it was a good opportunity to cut some Tape-Ease cylinder sections for any future work on wooden ankles. That will be for another time.

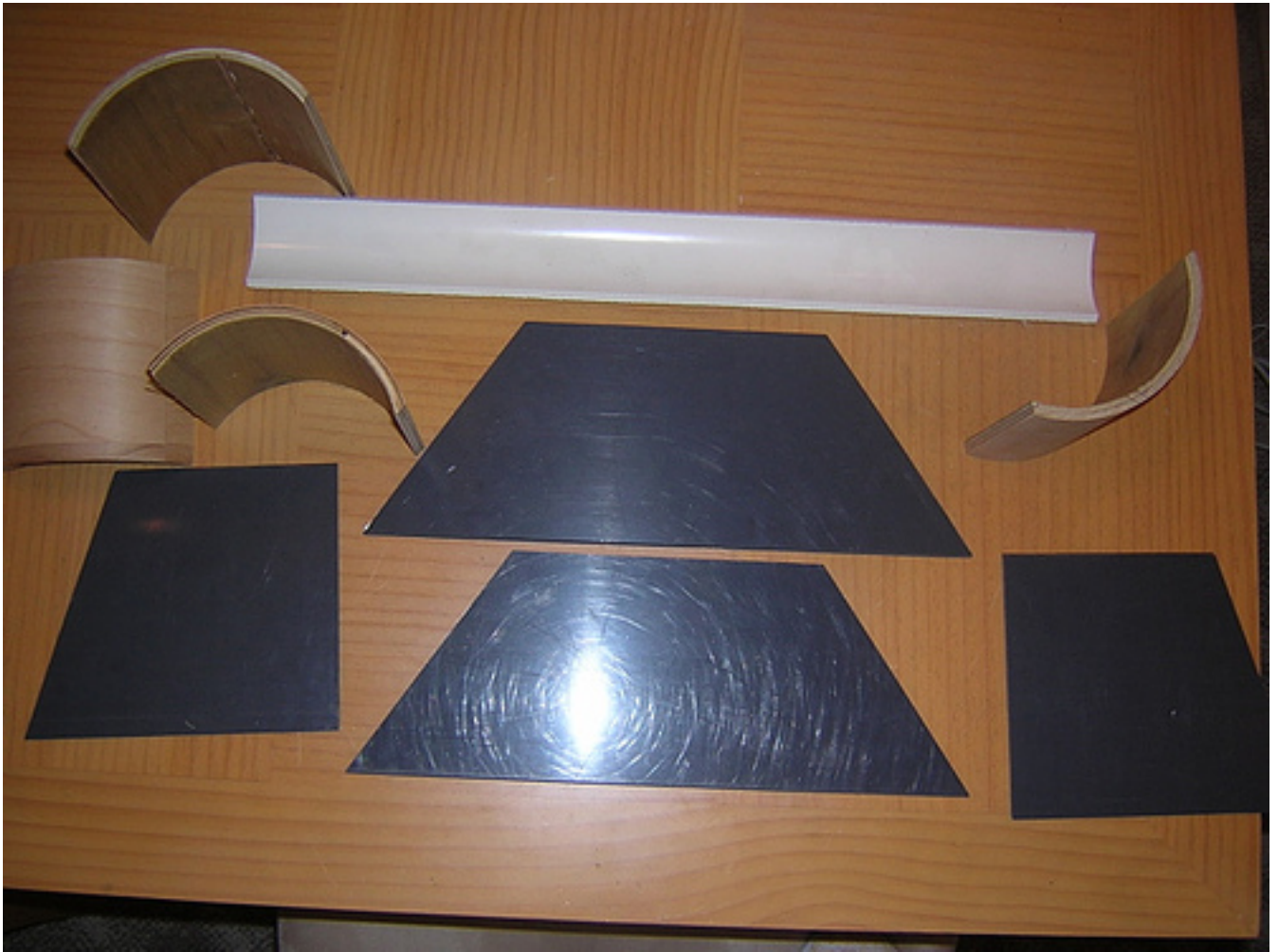


Back to the present, at Mike's we finished cutting the sides of the outer feet.





We still need to do a bit more work to complete the outer feet, but they are getting there.



*posted by Victor Franco at 10:09 PM* 0 COMMENTS

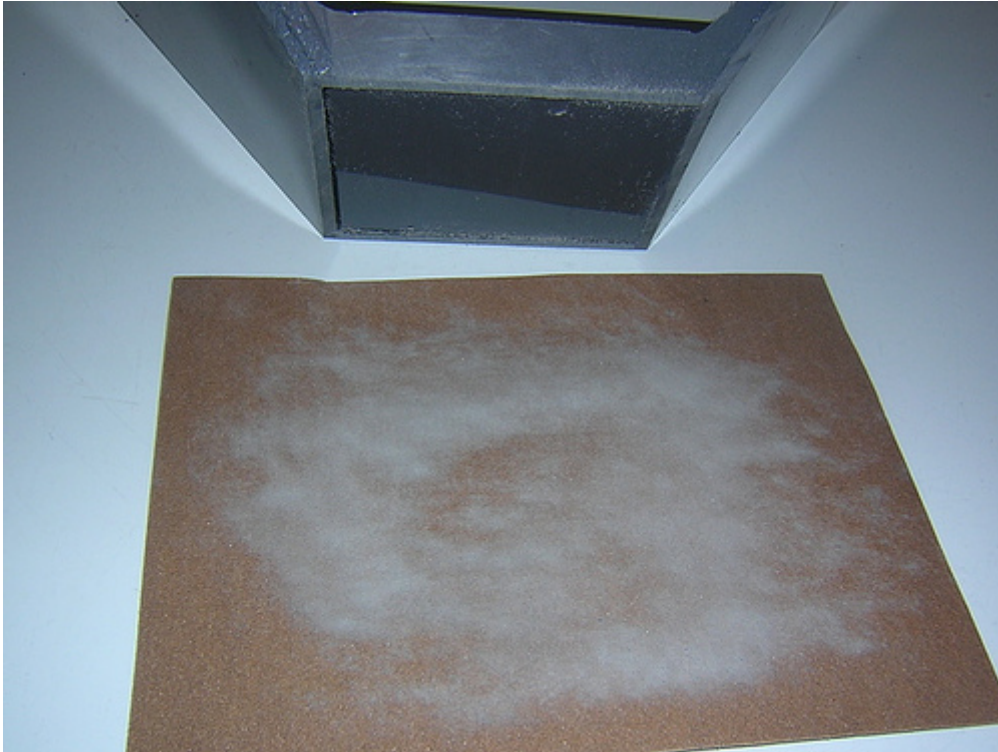
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MONDAY, DECEMBER 04, 2006

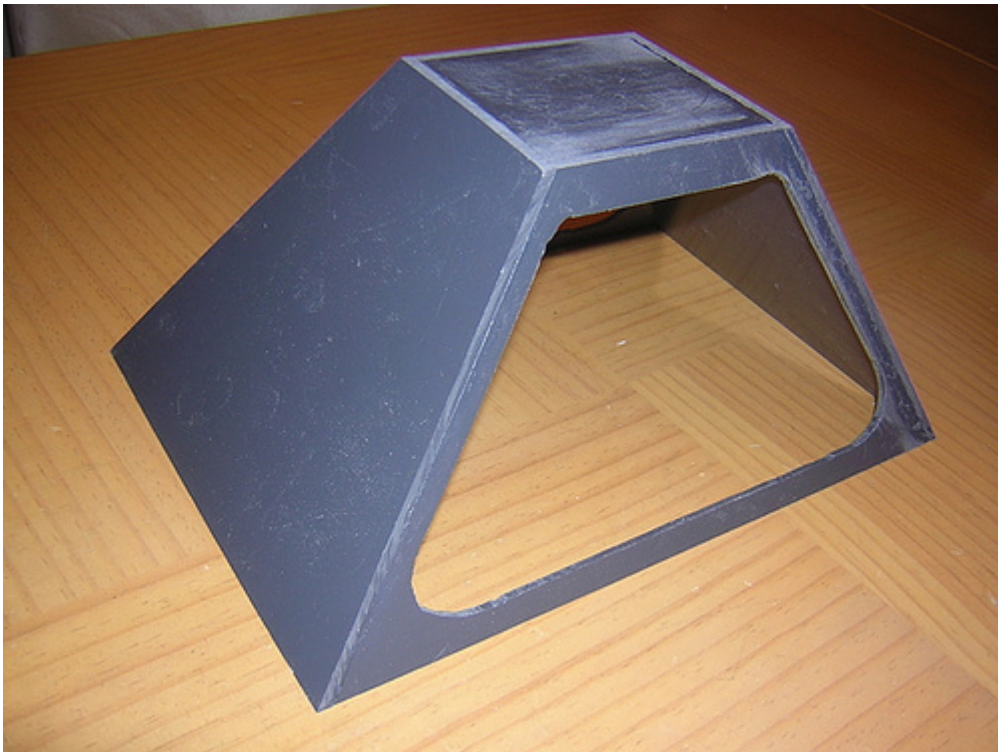
## **Sanded Down Top of Center Foot Shell**

Tonight I was able to clean up the top part of the foot shell that I [glued together last weekend](#).

A few of the side edges overshot the top plate, so I simply turned the foot shell upside down and ran it against some sandpaper for a while.



The top is pretty much flat now. I still need to fill in a small gap at the top, I hope to do that tomorrow.





*posted by Victor Franco at 9:27 PM* 2 COMMENTS

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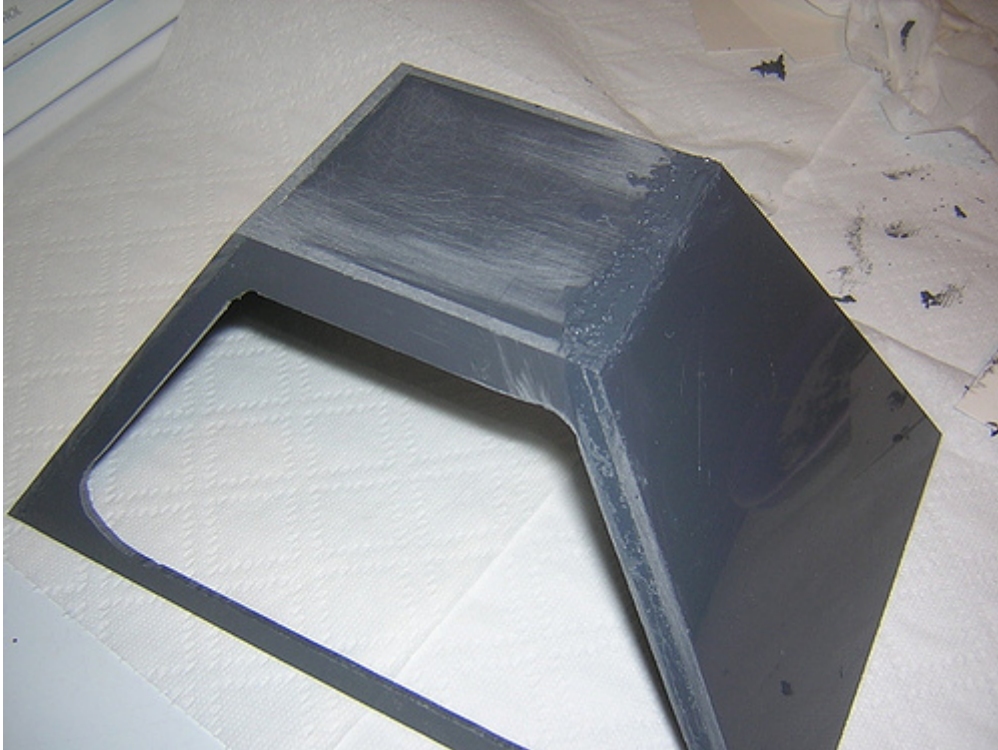
TUESDAY, DECEMBER 05, 2006

## Filled Gap in Top of Center Foot Shell

I used some PVC shavings and PVC glue to fill in the small gap at the top of the foot.



In retrospect, I should have done this before last night's sanding since I'll have to sand this again, but I'm just not that bright. Breathing in too many fumes from the PVC glue probably isn't helping either.



Unfortunately, my building schedule is going to be curtailed for the next week or so, so updates will be sparse for a few days. :(  
*posted by Victor Franco at 8:34 PM* [0 COMMENTS](#)

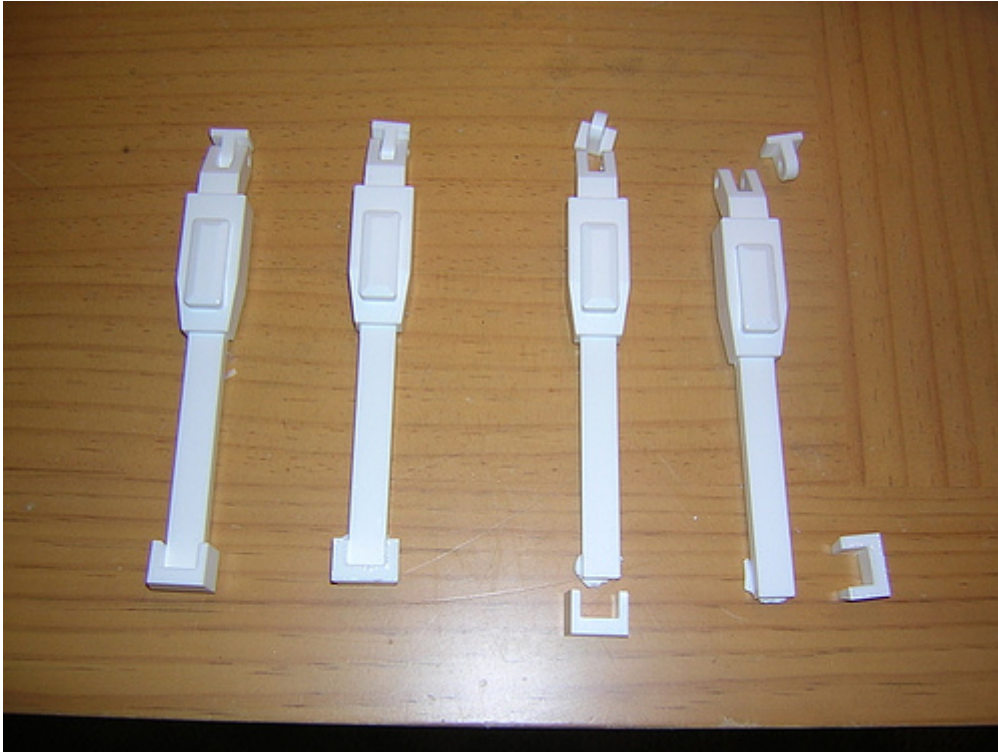
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FRIDAY, DECEMBER 08, 2006

## Resin Battery Box Harnesses Arrive, More Gap Filling

Back from a couple of days away on a business trip, trying to make at least infinitesimal progress.

Way, way back on [July 21, 2005](#), my first set of battery box harnesses arrived. They are of the one-piece variety. I decided I wanted the three-piece type, so I ordered some from Keith, and they arrived today.



I also did a little bit more filling of the gap at the top of the center foot shell. I could see a little dip remaining, hopefully that is filled now.  
*posted by Victor Franco at 11:50 PM* 0 COMMENTS

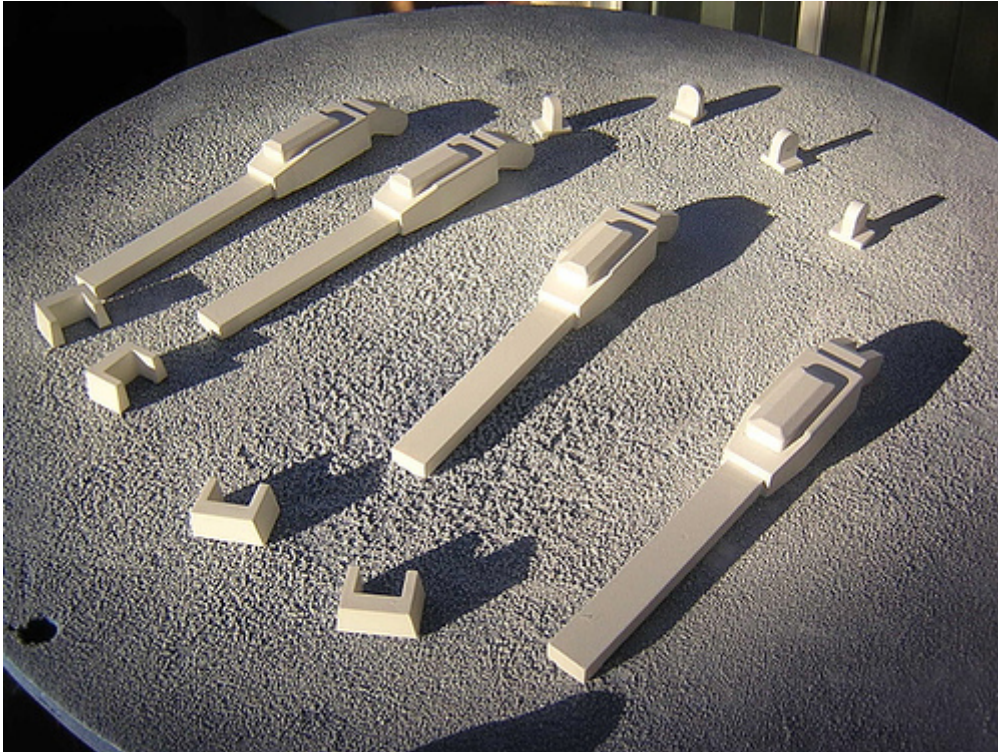
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SATURDAY, DECEMBER 09, 2006

## Battery Harness Work, Sanded Top of Center Foot, Prepped Rear Logic Surround

Today I sanded, Bonded and applied primer to the battery harnesses. It occurred to me after the fact that I may need to drill some of the parts, to install a pin through the hinge at the top. No big deal, though. If I do that, I'll do it before I paint the parts.

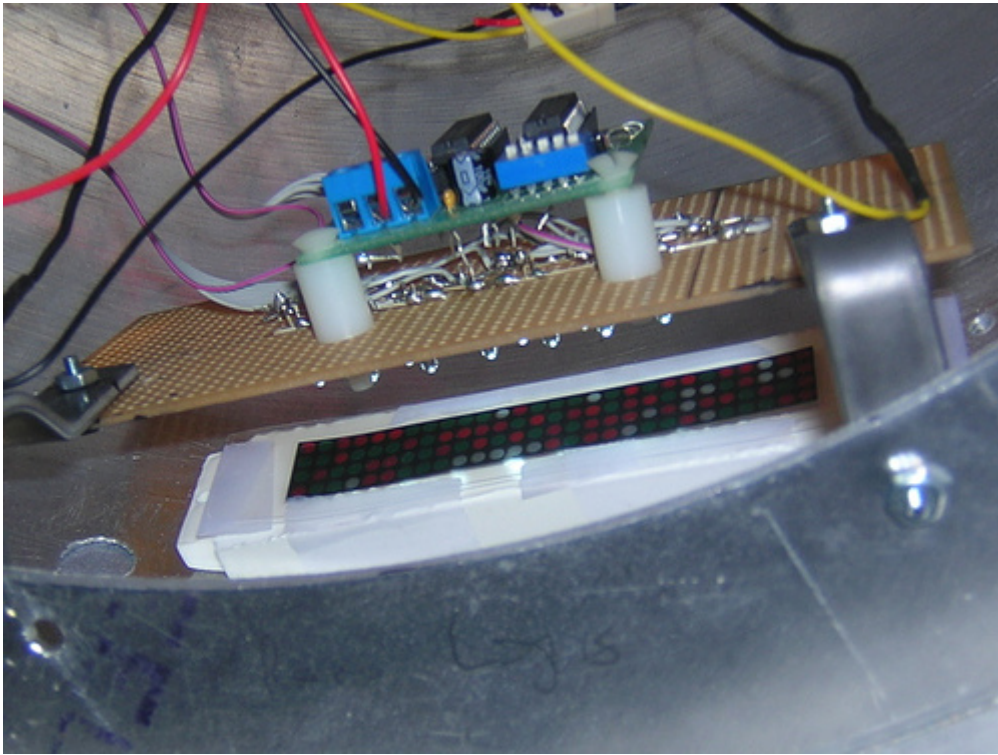




I also sanded down the area that I filled last night on the center foot. I need to do one last light pass to fill in pinhole gaps.

Finally, I worked on getting my resin rear logic surround to fit through the corresponding dome hole. I lightly filed the left and right edges of the surround, and eventually it fit.

I cut out a couple of the identical LED patterns I had printed earlier, and taped them together and tried the whole thing out in the dome to see how it looked. It will probably do for now. Obviously I still need to paint the surround silver.



Unfortunately, no planned updates again for a few days, but I hope to be back in the swing of things by mid-week.

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*posted by Victor Franco at 11:51 PM* 0 COMMENTS

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WEDNESDAY, DECEMBER 13, 2006

## Battery Harness Pins

Back from another business trip, I was able to get a minimal amount of work done tonight.

I drilled the resin battery harness pieces to accommodate a 1/8" pin that goes through the hinge area.



I also cut a 1/8" diameter metal rod (the same rod used as pivots for the utility arms) to form the pins of the correct length. I tried each of them out for size as they were cut.





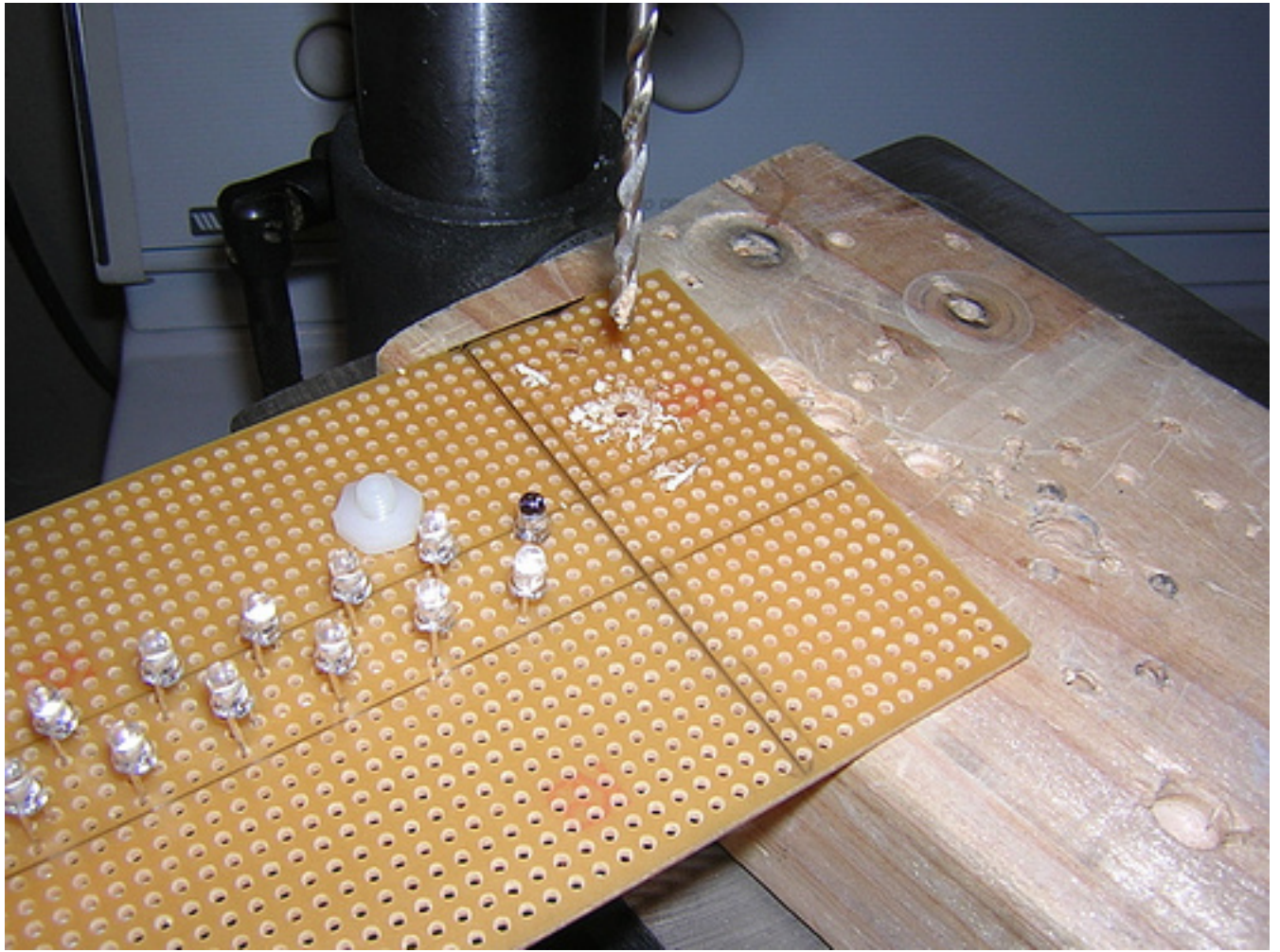
I also filled pinholes in the top of the center foot shell, I'll give that a final sanding tomorrow. I can only get piddly stuff like this done on weeknights these days.  
*posted by Victor Franco at 10:54 PM* 0 COMMENTS

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THURSDAY, DECEMBER 14, 2006

### Minor Rear Logic Adjustment

After a few days of looking at the rear logics in the dome, I decided the board hosting the LEDs and PIC flasher was sitting just a bit too high. It took a couple of tries, but I redrilled the mounting holes on the board to set it at a better height.





*posted by Victor Franco at 10:53 PM* 0 COMMENTS

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SATURDAY, DECEMBER 16, 2006

## **Painted Blue Areas of Battery Harnesses**

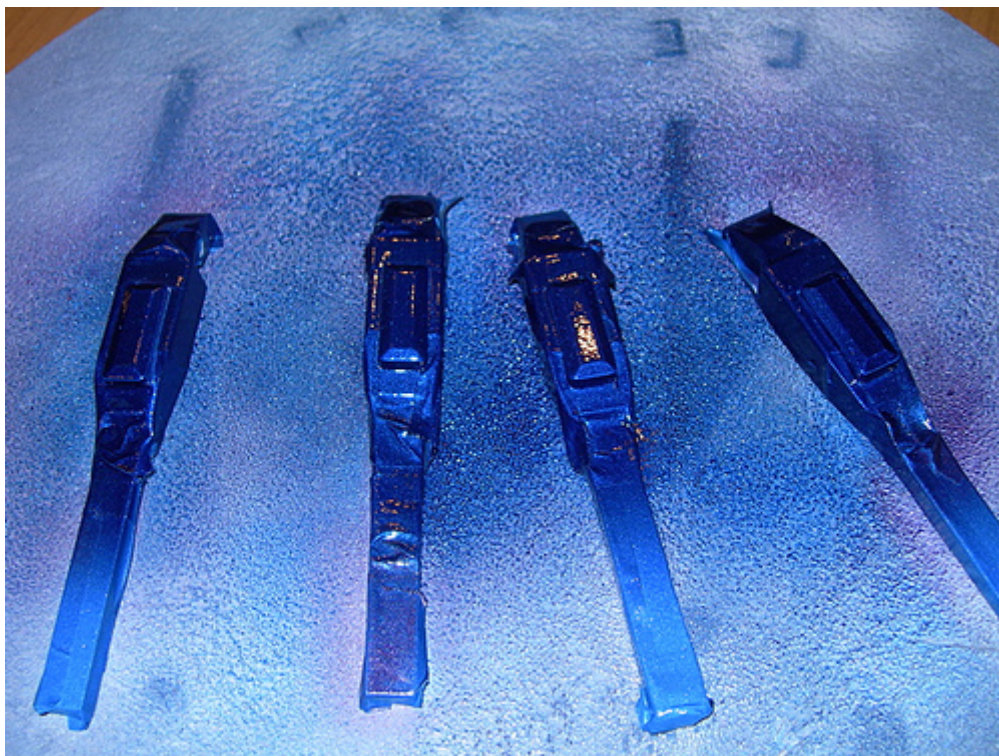
I can only paint on the weekends, and of course, it was drizzling today in sunny Southern California. Today was the day to start painting the battery harnesses, so I opened the garage door and gave it my best shot.

I masked the resin parts, and applied the usual Krider formula, starting with Rustoleum Metallic Purple, followed by Duplicolor Anodized Blue.





A final Rustoleum Crystal Clear Enamel clearcoat, and they're done.



This was something of a milestone. This was the last of the blue that remained to be painted (although I may repaint my dome panels since I'm not completely

happy with their appearance). I hope to paint the rest of the battery harnesses and the rear logic surround with Krylon Chrome Aluminum tomorrow.

After that, all that's left to paint are the battery boxes and foot shells, once they are done. Those will all be painted with Rustoleum Satin White.

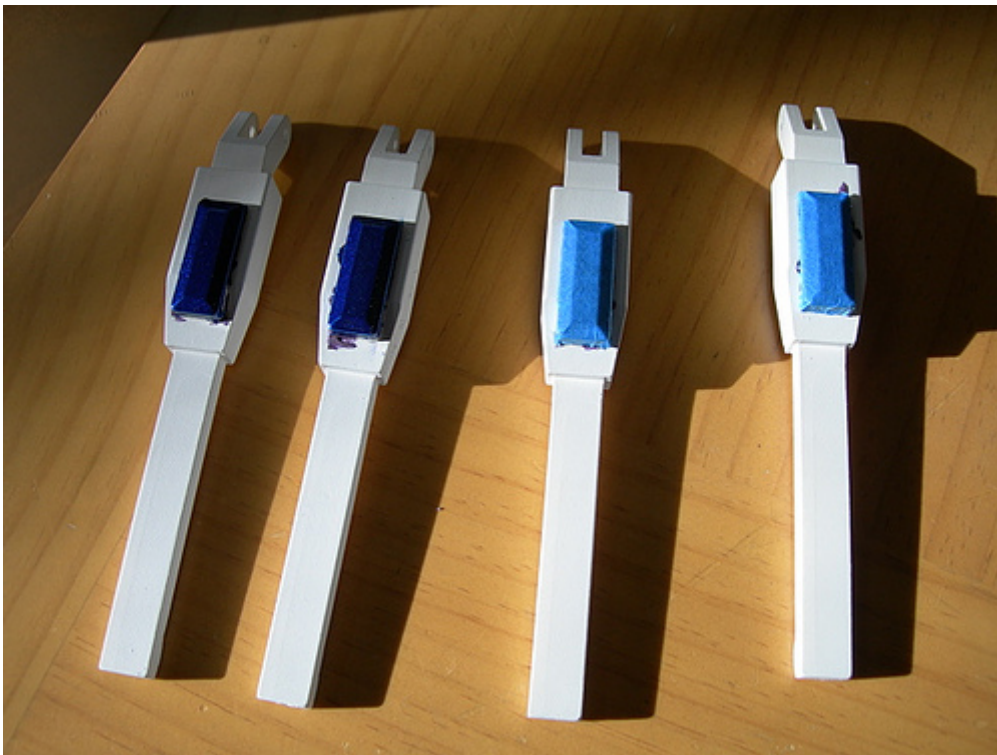
*posted by Victor Franco at 9:29 PM* [0 COMMENTS](#)

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SUNDAY, DECEMBER 17, 2006

## Finished Painting Battery Harnesses, Painted Rear Logic Surround

I hope I didn't jump the gun, but I pulled the masking tape off the non-blue areas of the battery harnesses, and masked the blue areas, in preparation for the aluminum painting. Some of the blue ran out from under the masking tape yesterday, but that will get painted over anyway.



After the masking, I painted all the remaining battery harness parts.





I also painted the rear logic surround.



*If I didn't mess this paint job up, then, like the blue, all my aluminum painting is*



done for this droid. But if I didn't let the blue paint dry long enough before masking, I may have some more work to do. I should know in the next day or two.  
*posted by Victor Franco at 11:12 PM* 0 COMMENTS

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MONDAY, DECEMBER 18, 2006

## Rear Logic Surround Installed, Dome Exterior Done

The paint had dried on the rear logic surround, so I installed it in the dome.



The outside of the dome is now complete.

Having said that, I reserve the right to repaint the blue panels at some future date. I'm not sure if I will do that before or after the rest of the droid is done (if ever). I will also have to fiddle a bit with the wiring. I already know of one loose connection, and I still need to secure the wires neatly on the inside.

*posted by Victor Franco at 11:05 PM* 0 COMMENTS

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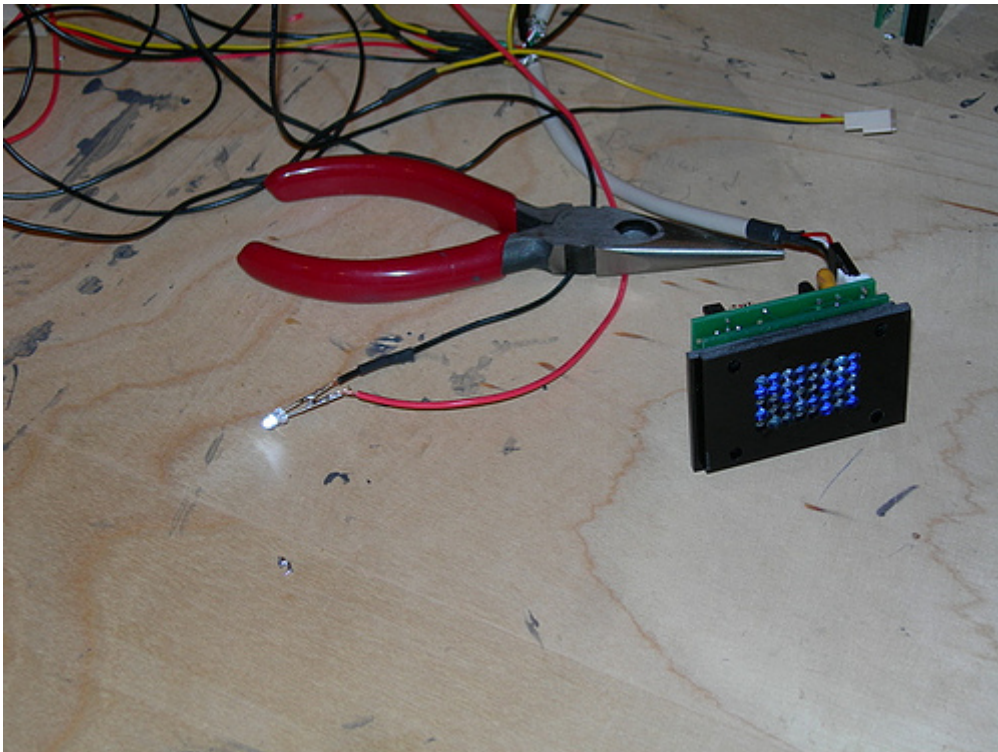
WEDNESDAY, DECEMBER 20, 2006

## Unmasked Battery Harnesses, Added LED to front HP

Today I removed the masking tape from the battery harnesses. The paint job turned out okay.



In the evening, I decided to add an LED to the front holoprojector wiring.



The photo below was taken without the flash, so the color doesn't appear as white

as it really is.



I hate to do it, but the dome wiring is such a mess, I think I'm going to have to redo it again. I need to come up with a clean way of running pairs of wires to each part of the the dome that gets lit. And in the case of my top front logics, I'm running three wires, to toggle the message display. Ugh.

*posted by Victor Franco at 11:38 PM* [6 COMMENTS](#)

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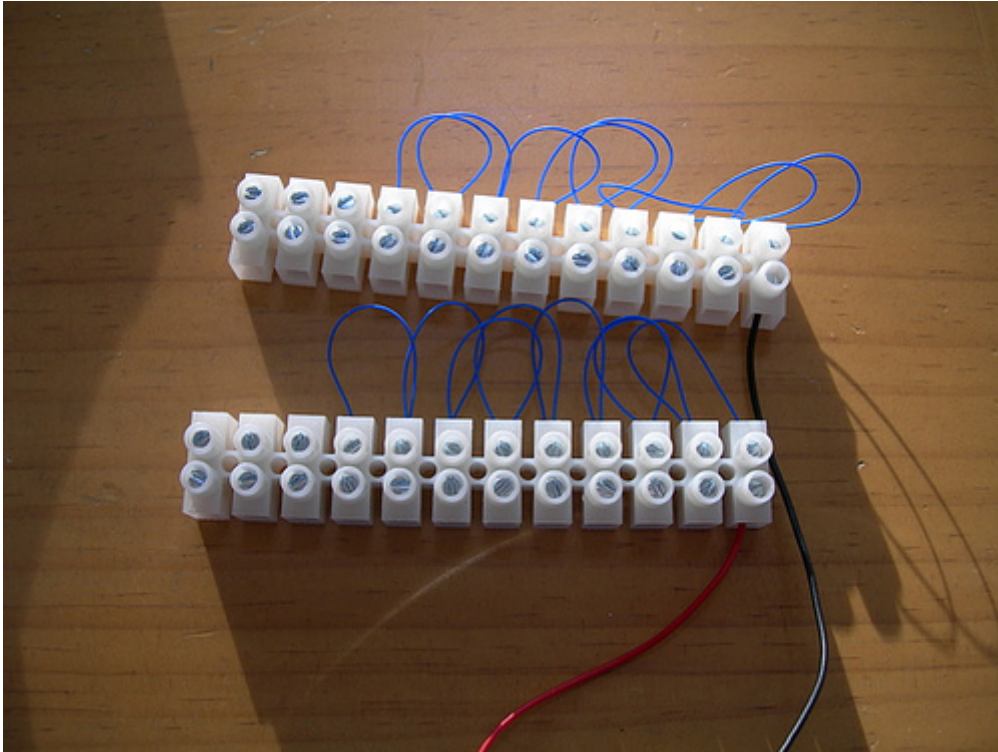
THURSDAY, DECEMBER 21, 2006

## Started Reworking Dome Wiring

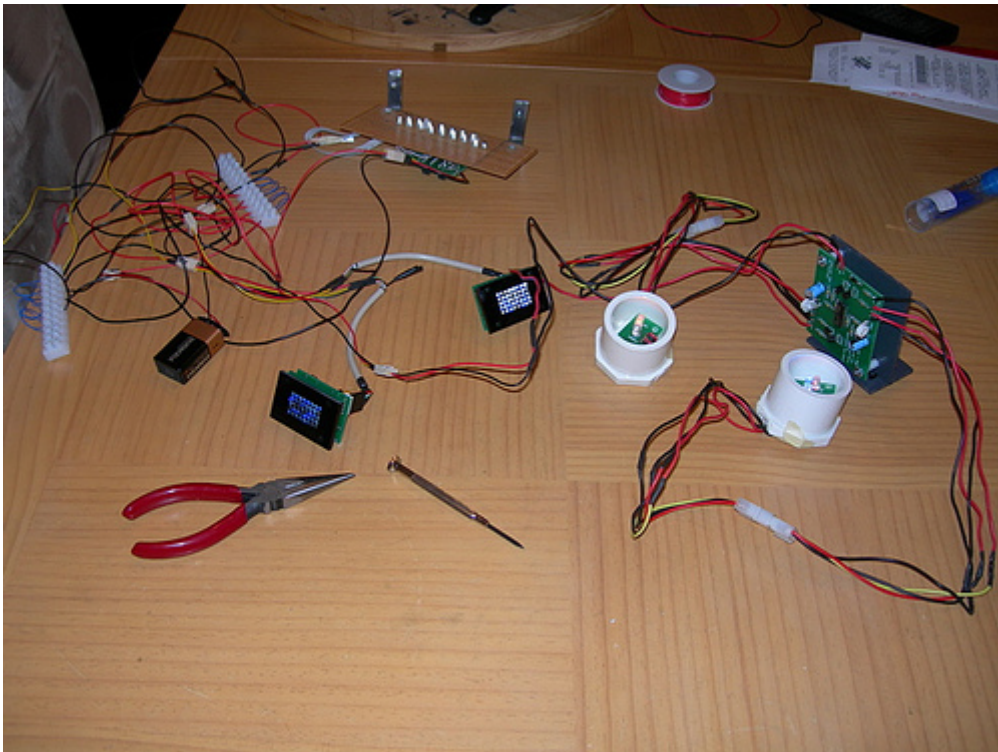
Until today, my dome wiring had a main "power bus," consisting of a pair of power and ground lines, to which each electronic component of the dome was connected. The problem with that was lots of solder points that were prone to failure.

Today I picked up some terminal blocks to replace the power and ground lines. These terminals have two screws per connection, that allow me to daisy-chain each port to a common line (power or ground) on one side of the terminal block, and the corresponding line out to the component on the other. (Hopefully I'm not broadcasting or inhibiting radio signals with this...)





I tried hooking up each dome component to the terminal blocks, and everything seems to work pretty well, and the whole setup is a bit neater.



Hopefully once this is all back in the dome, it will work solidly and be much less of a mess. I should know shortly.

*posted by Victor Franco at 11:40 PM* 0 COMMENTS

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FRIDAY, DECEMBER 22, 2006

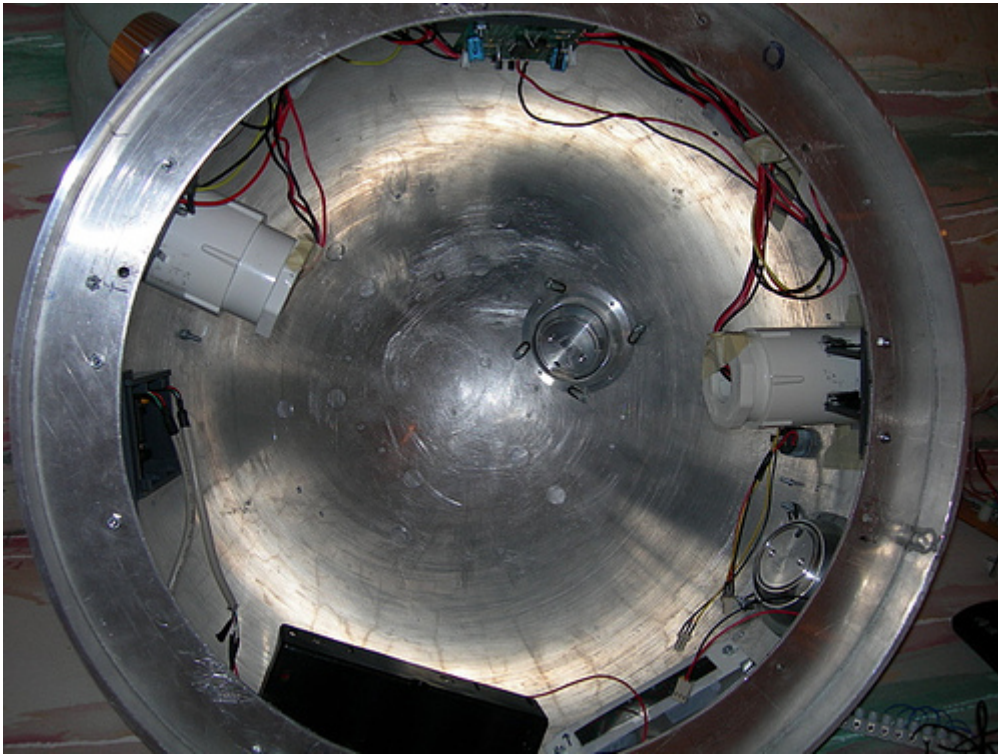
## Visited Mike, More Dome Wiring Cleanup

This afternoon I dropped by Mike Senna's house to talk about my upcoming drivetrain build, and how to properly mount the back door. The drivetrain sounds like it is going to be quite a challenge. I will need help from a machine shop to have some of the holes drilled.

We also discussed the remote control and receivers. I took a good look at what Mike has in his droid, and I plan to order the same equipment sometime in the near future.



In the evening I returned to my task of tidying up the dome wiring. It's getting better, I'm almost done.



*posted by Victor Franco at 11:51 PM* 0 COMMENTS

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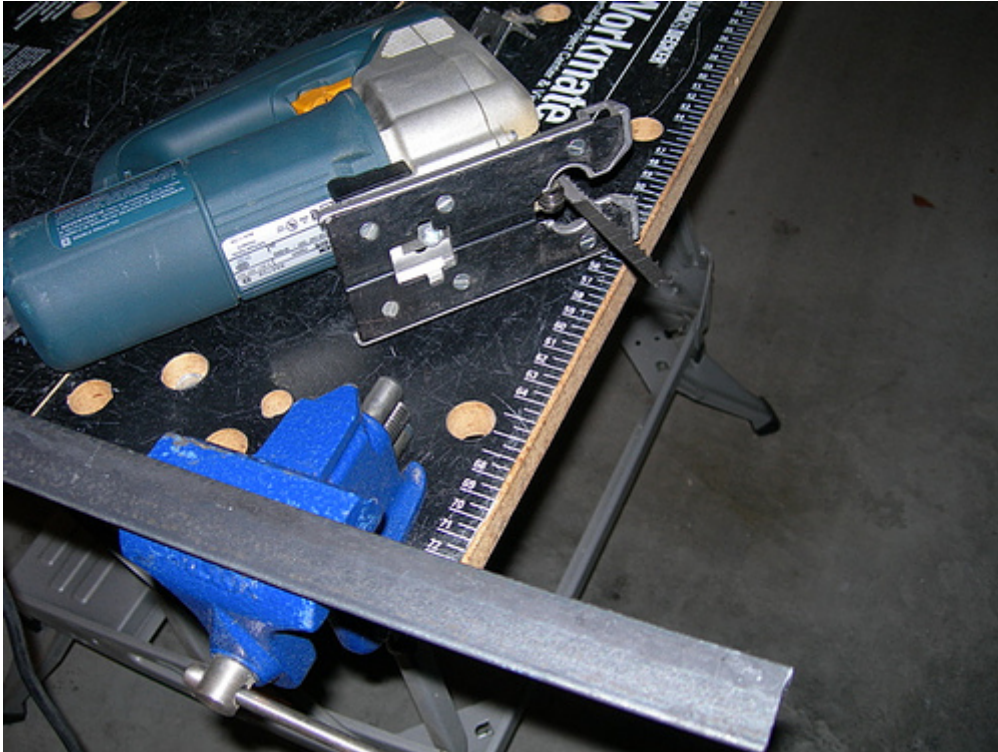
SATURDAY, DECEMBER 23, 2006

## Installed Back Door Brackets

Today I installed brackets on the frame that will help attach the back door. To illustrate that even the most trivial of tasks takes some effort, I'll go into a bit more detail today.

First, I took my L-bracket channel, tightened it in the vice, and then used a jigsaw to cut small 1" pieces.





Once four pieces were cut, I filed them smooth.



Next, I matched each bracket to the area on the frame that they will be installed. The brackets line up with an aesthetically pleasing area on the back door that will

have a screw hole drilled into it at a later date.

I used a marker to mark two dots for two #4 screw holes that will be drilled into each piece.

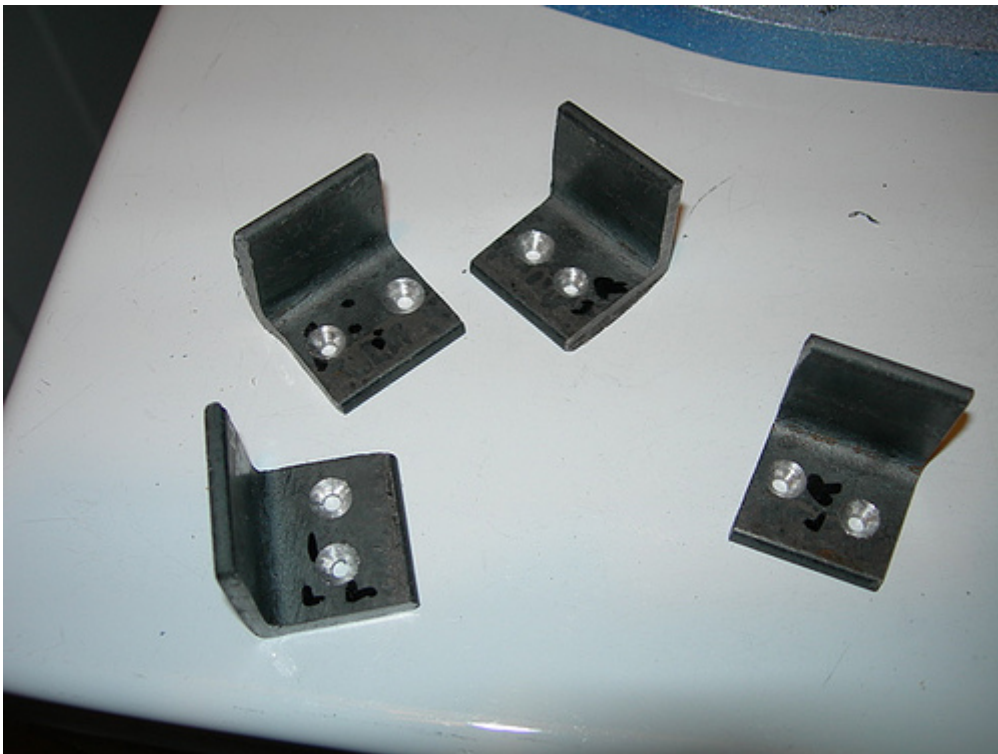


I took the work over to the drill press, and drilled the holes for the #4 screws.



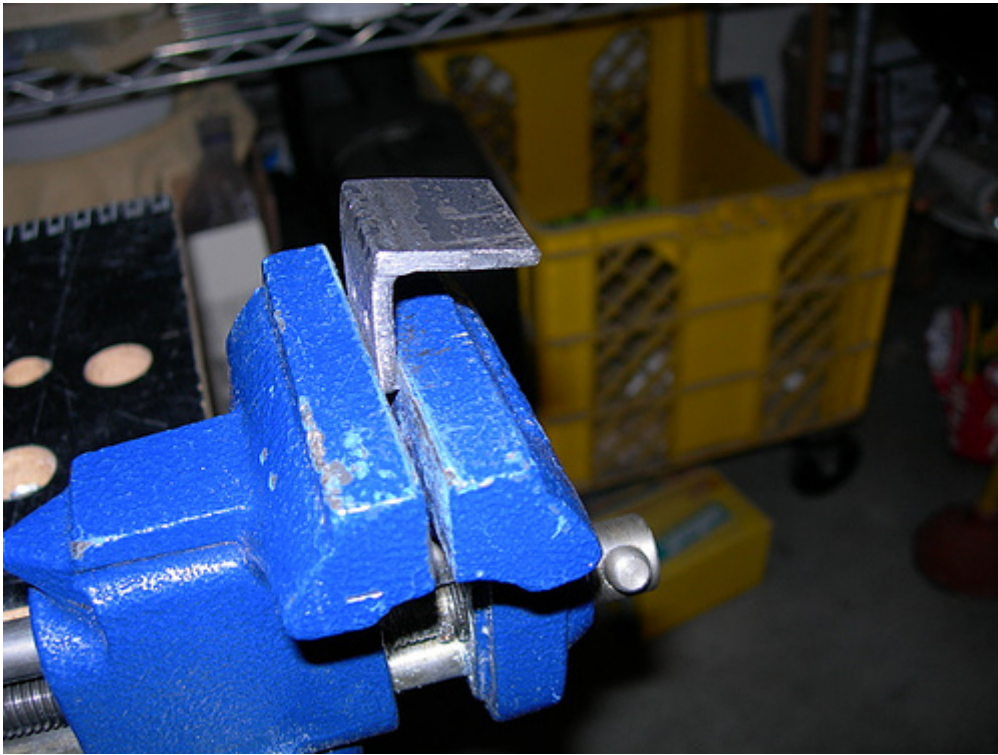


After drilling, I countersunk the holes.



I used a hammer to put a slight bend in the L-bracket, so that the curve of the door won't bump into the bracket.





Finally, it was time to screw the brackets onto the frame. Here's the lower-right bracket. The #4 screws are 1/2" long.



There are four brackets in all.



Soon I will mount the door to the brackets. This will involve holding/taping the door to the body, and drilling one hole per bracket, through both the door and bracket as a pair. This hole will be the proper size to tap a #4 machine screw. Then, each bracket will be tapped, while the hole in the door will be widened slightly and countersunk to accommodate the #4 screw.

There is a problem I must resolve first, however. The radius of the curve on the back door for my droid is slightly smaller than it should be (I'm not 100% sure why, I may have accidentally bent it). So I'll have to carefully bend the door to be "wider" before I can mount it. I'm obviously worried some harm may come to the door or the panels that are JB-Welded in, but I have to do it. Nothing's ever easy.

*posted by Victor Franco at 11:04 PM* 0 COMMENTS

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SUNDAY, DECEMBER 24, 2006

## Started Working on Battery Box Cable & Knurled Fittings

Today I worked on getting the brass hose I purchased at Lowe's last year to fit into the knurled cable fittings that I purchased from Jerry Greene recently.

First, I used tin snips to cut the ends off of the hose. Then I cut a small amount of the rubber and plastic out of the inside of the hose to allow the brass braid to flex inward, and I then wrapped the end with masking tape.



I worked the hose into the fitting as best I could, and screwed the fitting into the battery box for looks.





Then, as a total cheat, I set the whole thing up with my budget feet and battery harnesses on my droid. I'm not planning to use the budget feet on this droid because a) I don't have easy access to a welding machine to undo the tack welds and weld everything properly (nor have I ever used a welder), and b) I prefer PVC foot shells, which are on hold until Mike and I can find time to resume work on them.



*posted by Victor Franco at 9:36 PM* [2 COMMENTS](#)

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MONDAY, DECEMBER 25, 2006

## **Attached Back Door**

This evening I attached R2's back door, thereby closing the tin can that is my droid.

First I taped the back door as tightly to the skins as possible, centered in the proper position. Then I drilled four holes through the skins, and through the brackets behind the skins, using a #43 drill bit for tapping a #4-40 screw. Two holes are on the left side of the door, and two are on the right side.



Next, I tapped the holes in the brackets with a #4-40 tap.





After that, I took the back door to the drill press, and widened the holes with a slightly larger drill bit that allows the #4 screw to pass through. Note that I still need to countersink these holes.



Finally, I did a test fit of the door, with the rear power coupler loosely fitted at the center-bottom. The door fits pretty well, except the top still bows out a little bit from the body. :(



I'm not entirely sure how I'm going to address the problem of the top of the door not sitting flush against the body. I may add another screw or two at the top, or I may just live with it, as it's not that bad. I also managed to knock out both of my rear coin returns when I was trying to bend the door to fit the body. I'm not too heartbroken about this, since I have a set of Wayne's coin returns on order, and I may just use those instead. For now, mine are taped back in place.

*posted by Victor Franco at 10:40 PM* [0 COMMENTS](#)

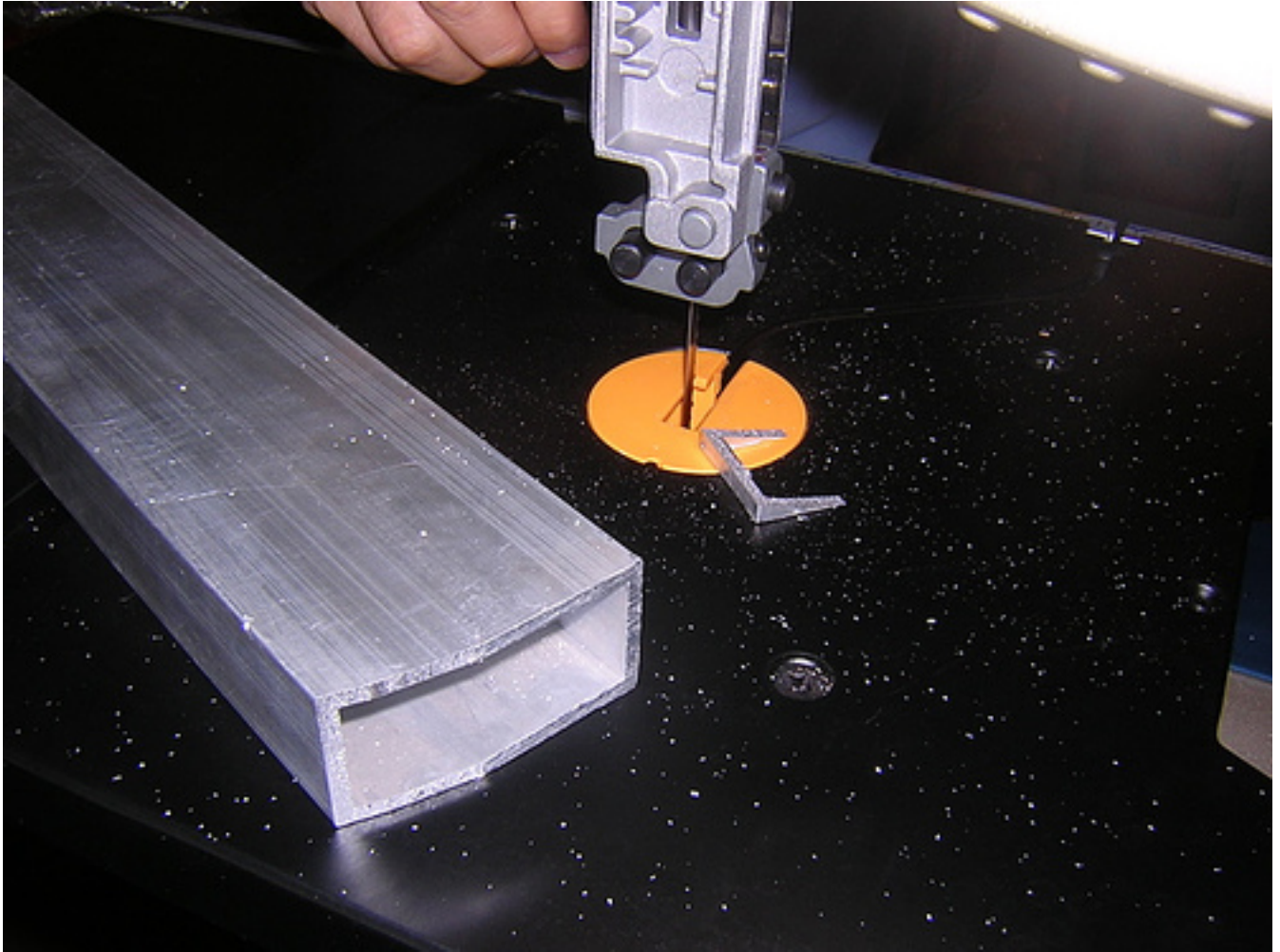
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TUESDAY, DECEMBER 26, 2006

**Tested Band Saw, Countersunk Door Screw Holes,  
Marked Up Aluminum Tubing**

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Tomorrow (Wednesday) I'm planning to start work on the drivetrain. My friend Kelvin, whose tools I've been borrowing, just purchased a band saw (lucky me!). He's agreed to help me try cutting the aluminum tubing for the drivetrain at his house. Today we did a test cut just to make sure the band saw could handle it. It seemed to work great.

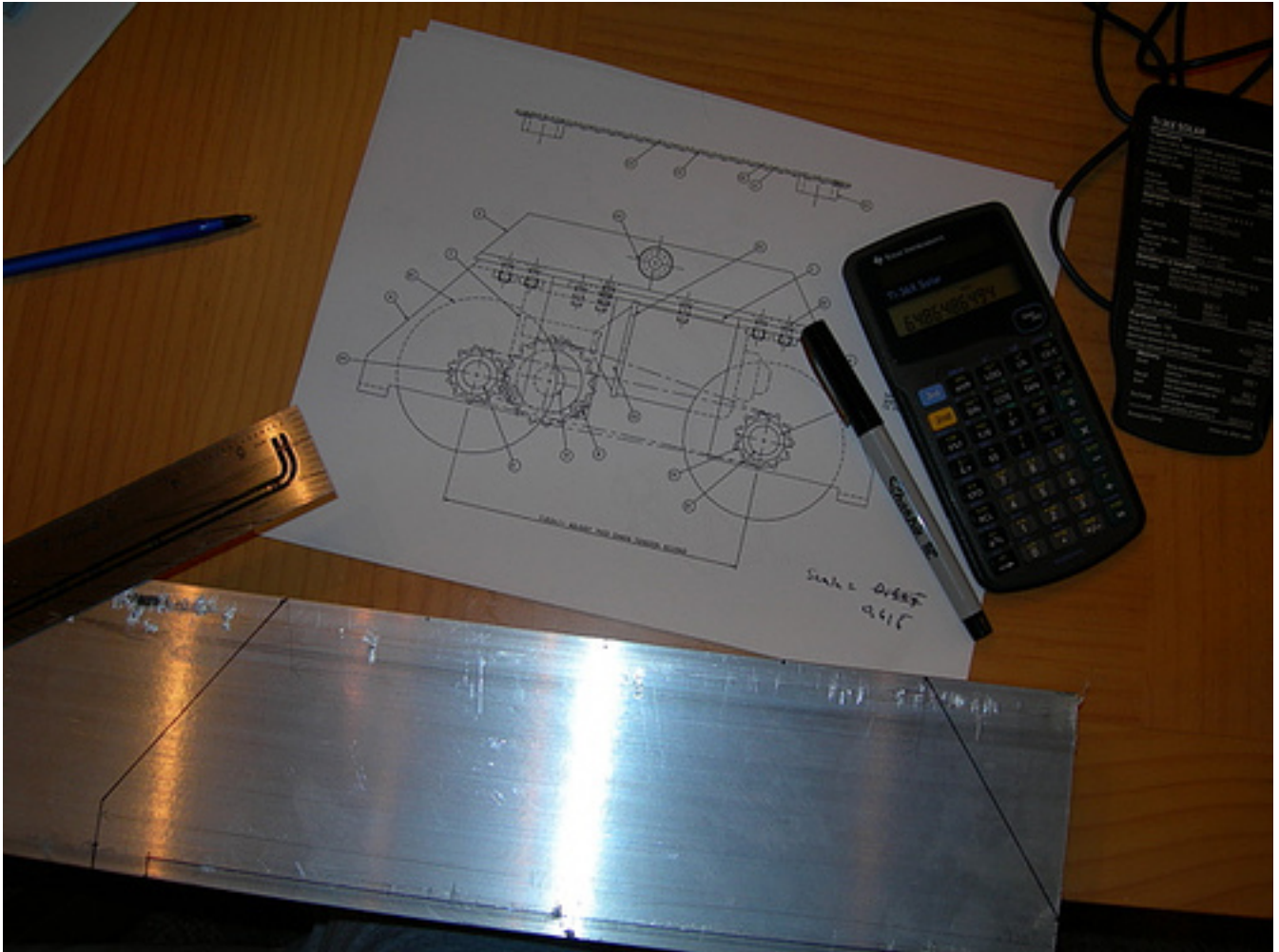


Back home, I countersunk the four holes in the back door, so that the screws holding the door onto the body will sit flush with the back door's surface.





Later in the evening, I started marking up the aluminum tubing for tomorrow's cuts. This drivetrain will be based on the Heath and Alex drivetrain design.



I really hope I don't mess this up. I've already realized I have one problem - the wheels I purchased are too wide for the tube. I'm hoping I can Dremel out some material from the aluminum tube to get the wheels to fit.

*posted by Victor Franco at 11:50 PM* 0 COMMENTS

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WEDNESDAY, DECEMBER 27, 2006

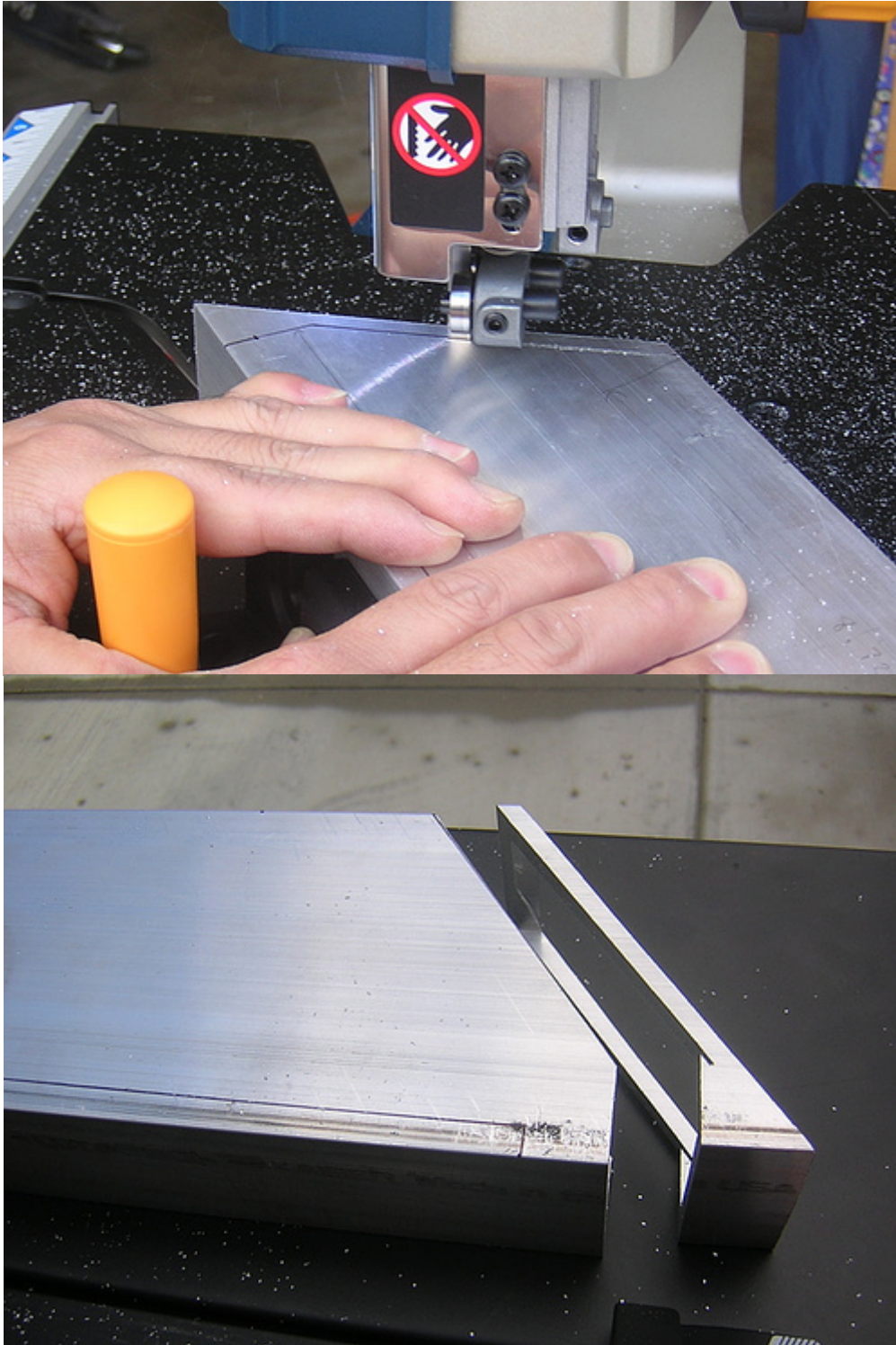
## Ordered Remote Control, Cut Drivetrain Frame

Today was a long-awaited day, I ordered my remote control from Vantec. I ordered product numbers KH916 ([Futaba 9 channel remote](#) + Keycoder 16 switch Hitchhiker for controlling sounds) and RDFR23 ([the dual front/rear speed controller](#)). The radio is retuned for ground frequencies by Vantec. I was told the wait for the radio is about three weeks, but that's just a blip on the R2-building time scale. The equipment cost a pretty penny, but nothing but the best for R2. :)

Today I also started scratch-building my drivetrain. Thanks to my friend Kelvin

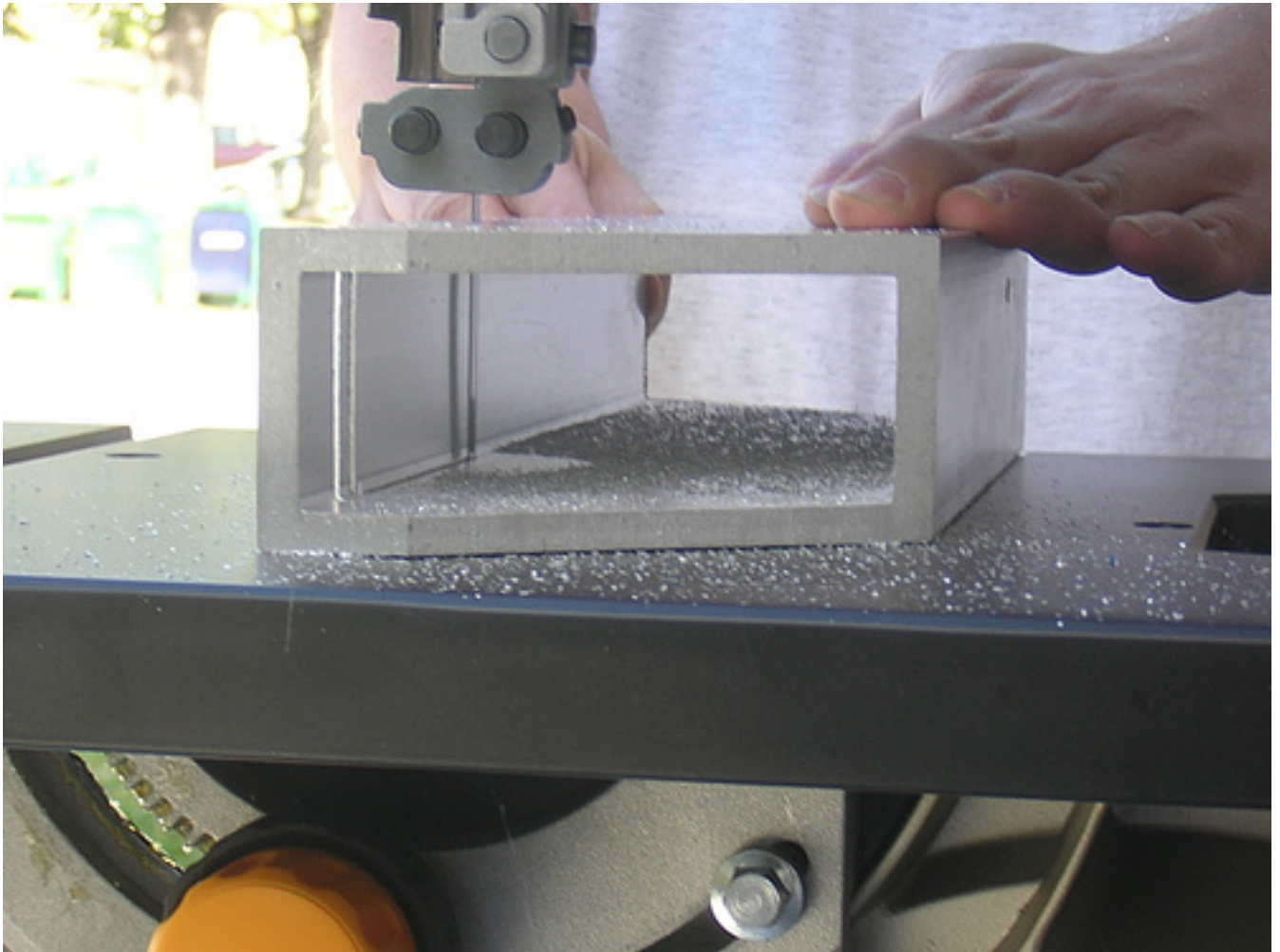
and his band saw, what would otherwise have been a difficult portion of the build was made much less so.

Kelvin and I took turns cutting on the dotted lines of my aluminum tubing, forming the main frame of the drivetrain.

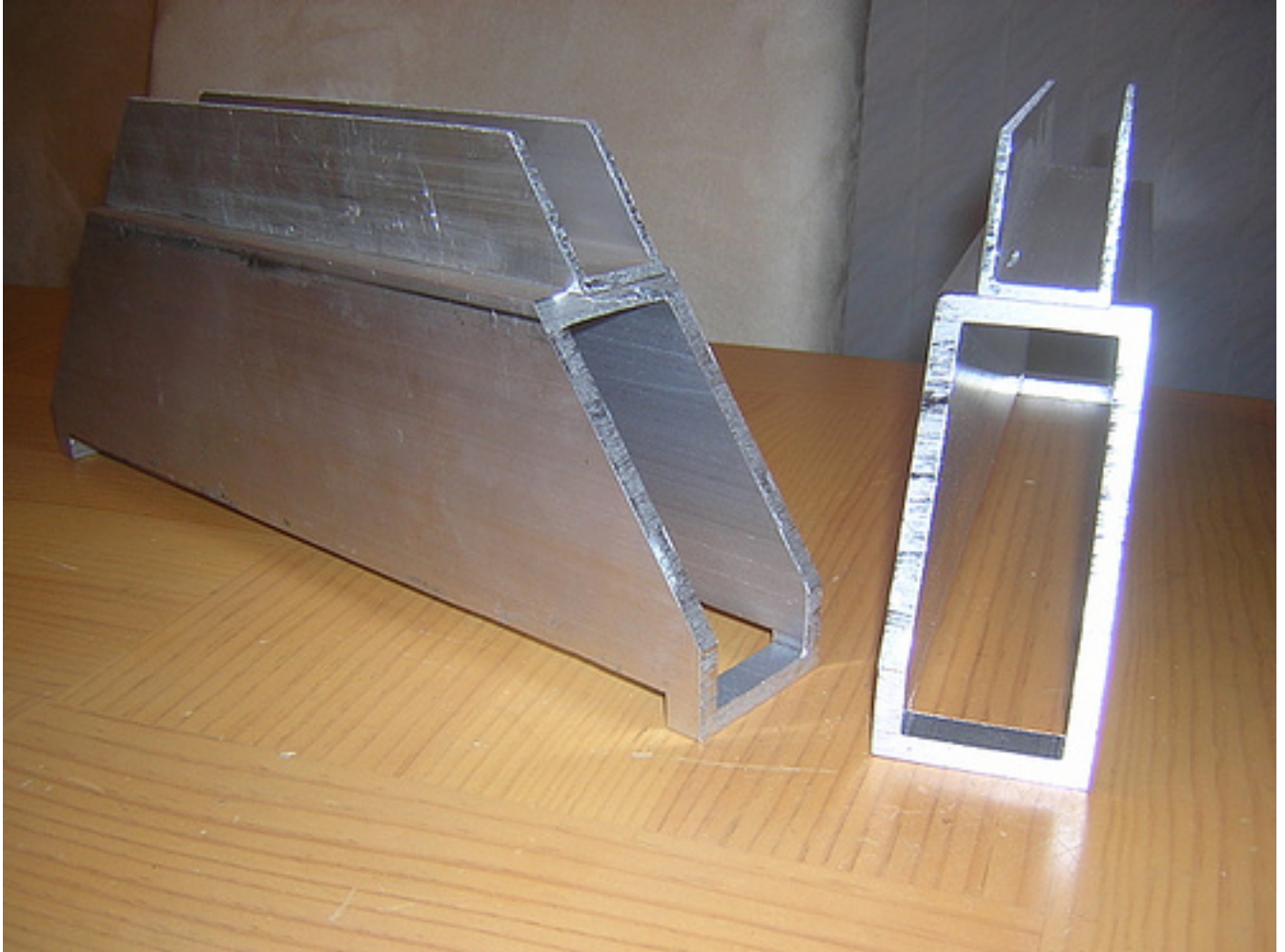




The band saw did a very good job of cutting through the aluminum 2x4, even on some of the longer cuts.



The parts turned out exactly how I hoped they would. (My only concern is that what I hoped for, and what I actually need won't be one and the same.)



There is still a long way to go on these, more metal to cut and holes to drill. But it's a start.

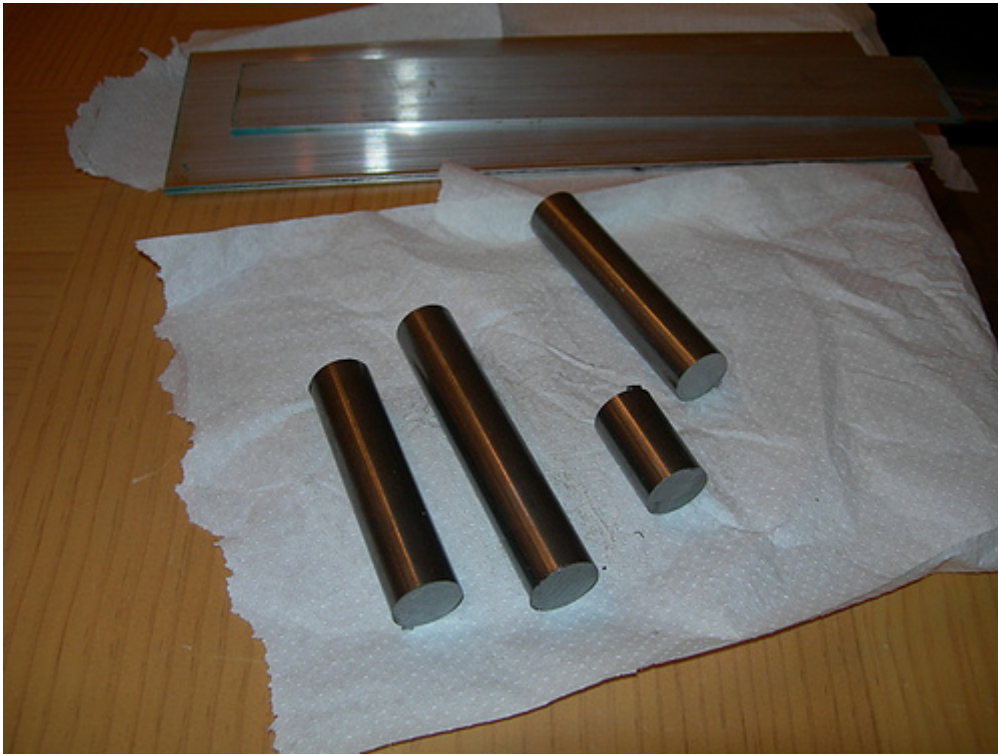
*posted by Victor Franco at 5:07 PM* 0 COMMENTS

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THURSDAY, DECEMBER 28, 2006

## More Metal for Drivetrain

Today I went to [Industrial Metal Supply](#) here in Irvine. I picked up some aluminum stock for more areas of the drivetrain, including the 3/4" rod that will serve as axles for the wheels and gears. I had them cut the rod to various sizes, as called out by the H&A Drivetrain blueprints.



*posted by Victor Franco at 10:37 PM* [0 COMMENTS](#)

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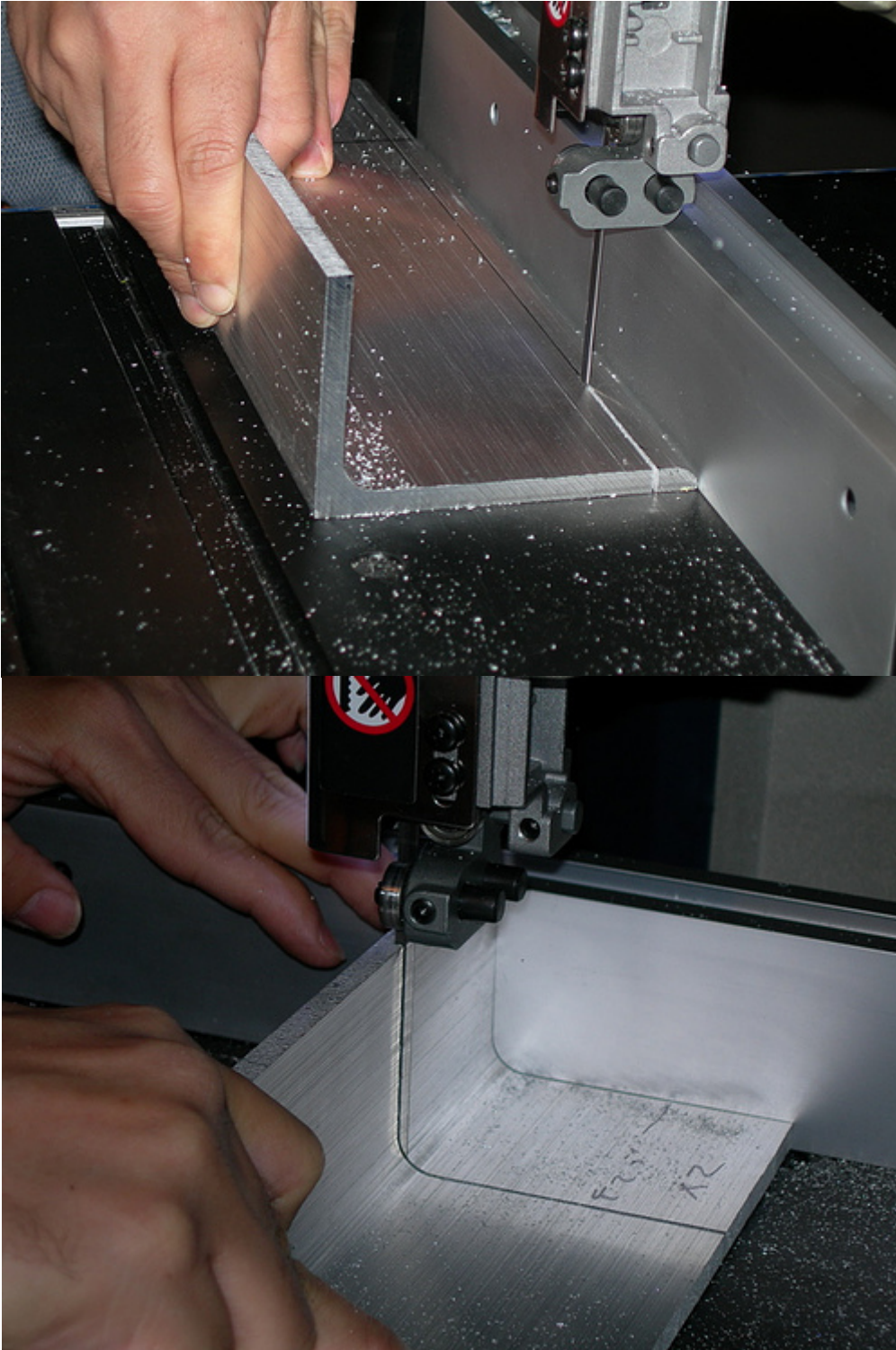
FRIDAY, DECEMBER 29, 2006

## Continued Drivetrain Cuts on the Band Saw

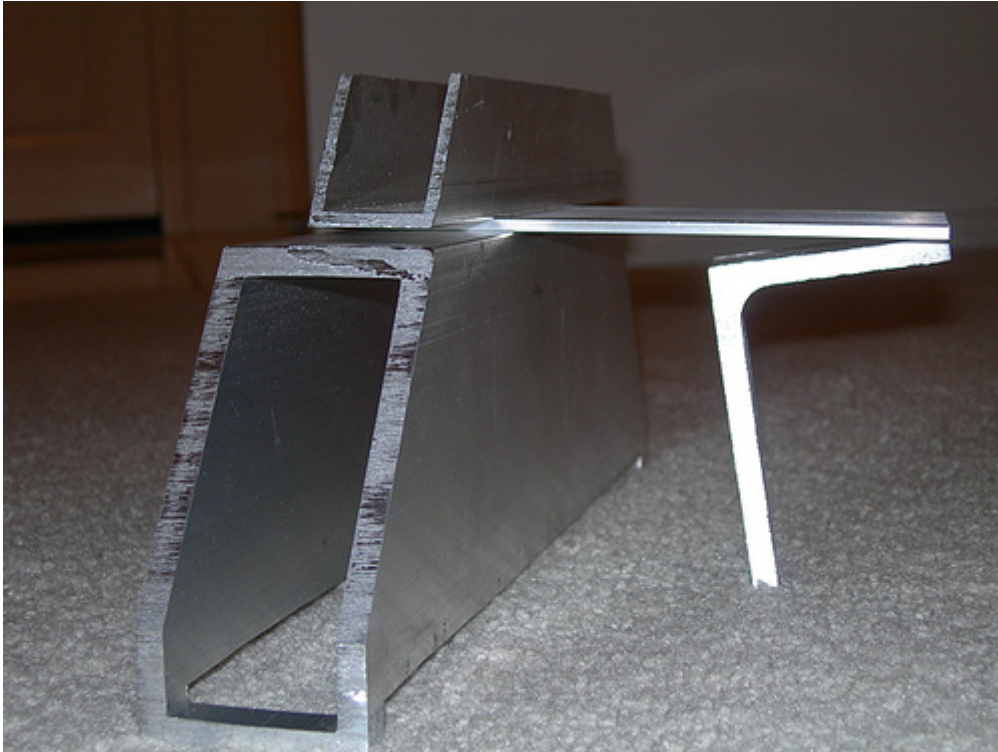
More fun with the band saw at Kelvin's.

I purchased additional aluminum stock at IMS for the "supporting players" in the drivetrain, and Kelvin helped out with the cutting of it in the evening.





I loosely piled it together for a sloppy preview.



I still need to acquire all sorts of details, like screws, nuts, gears, chain, etc. I also need to find a machine shop to drill out the holes for the axles and such.

*posted by Victor Franco at 9:41 PM* [0 COMMENTS](#)

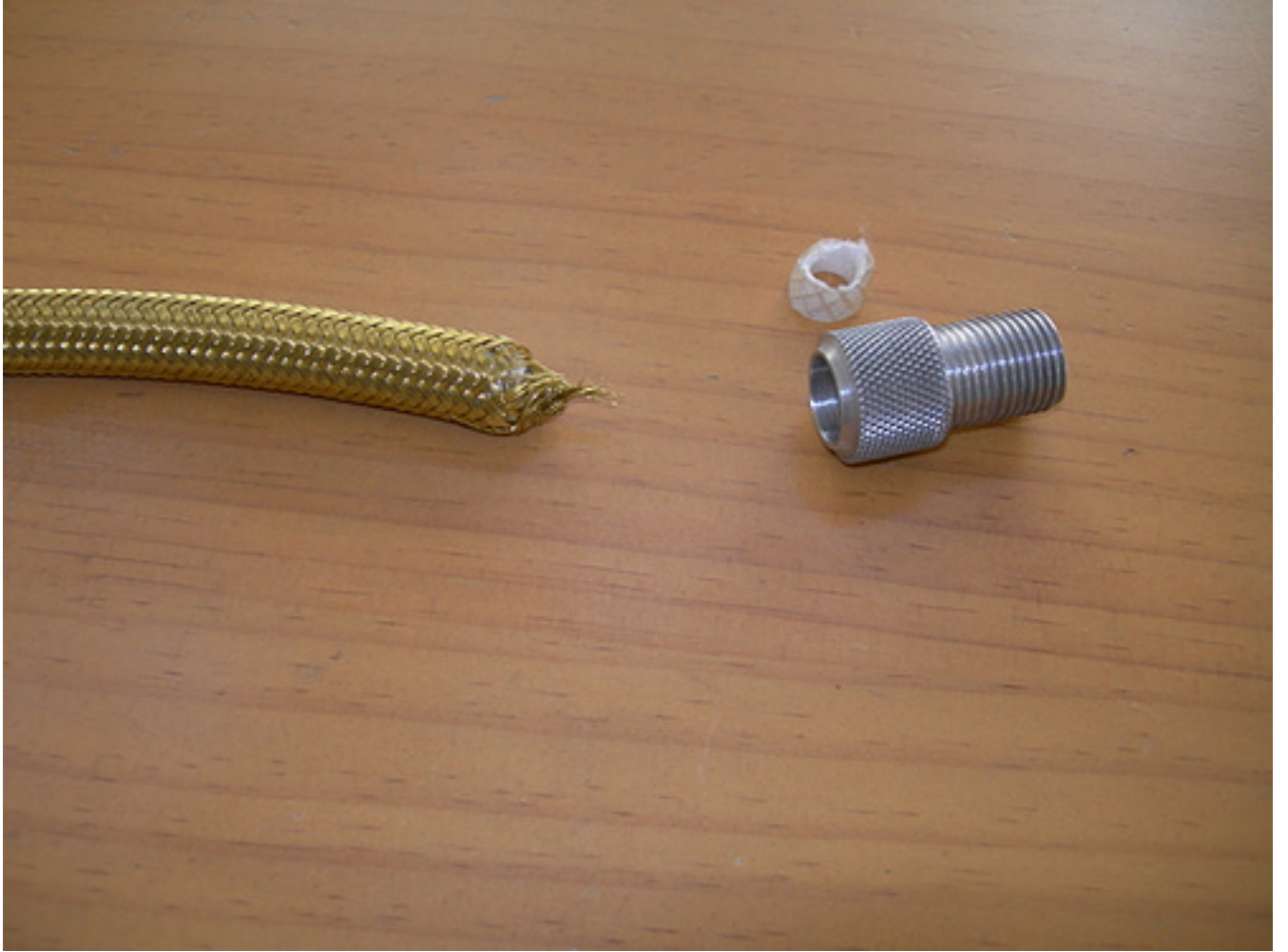
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SATURDAY, DECEMBER 30, 2006

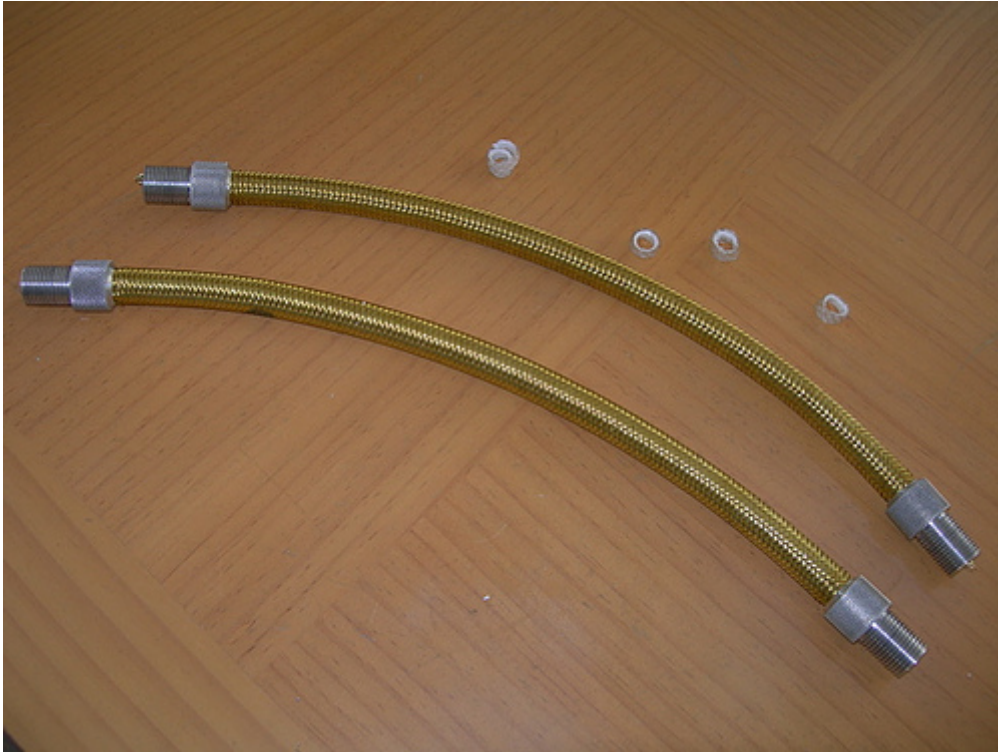
## More Knurled Cable Fittings

I didn't get much done today. I did what one does with knurled cable fittings -- I fitted them.

Like I did a few days ago, I trimmed the plastic out of the end of the inside of the brass hose, and worked the cables into the fittings.







I may redo the other two cables that I did the other day, as they don't fit as well. I think I need to buy a couple more brass hoses and start over again on those.  
*posted by Victor Franco at 11:07 PM* [0 COMMENTS](#)

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SUNDAY, DECEMBER 31, 2006

## Looking Forward, Looking Back

Every time I glance over at R2 these days, he seems to be looking back at me saying, "Please finish me!"



I'm trying, I'm trying. (I'll let you know if I start hearing voices next.)

R2 is pretty much done from the ankles on up. Things left to finish for the static version, before I move straight on to the remote control capabilities, include:

- Foot shell construction
- Battery box painting and installation (plus harnesses, knurled fittings and hoses)
- Rear power coupler installation

And then there is the drivetrain for the remote controlled version, which is

probably the most involved area left to finish.

I was hoping to be all done by now, but that was no doubt wishful thinking. If I can finish by February 2007 (which is still aggressive, given all that is left to do), that will still put my total build time at just about a year-and-a-half.

2006 was my first full calendar year of droid-building. My droid has come a long way from [one year ago](#). Some of the building milestones that I accomplished this year include:

- Finishing and mounting the skins in [January](#)
- Getting a skeletal R2 up on three legs in [February](#)
- Getting most of the dome done in [March](#)
- Scratch-building the horseshoes in [April](#)
- Scratch-building the booster covers in [May](#)
- Finishing the main part of the legs in July/August
- Dome electronics in September-December
- Starting the foot shell build, finishing filling in holes in body in [October](#)
- Starting the drivetrain build in [December](#)

I also had some unexpected adventures, like being backstage at the Jules Verne Awards with George Lucas in October, and meeting Ralph McQuarrie in November.

2007 should be a fun year. I anticipate finishing the build soon, and Celebration 4 is just around the corner in May. I hope to meet many of the R2 Builders from around the country and around the world. Who knows what other unanticipated events may occur in the next year?

Finally, a slight change to this weblog. I've been posting the most recent 30 days' worth of entries on the main page, but I realize that this takes a long time to load, and it's probably interminable for dial-up users. In addition, regular visitors to this blog almost certainly don't care about what happened 15 days ago (let alone yesterday).

Therefore, I'm cutting down the number of days displayed on the main page to seven. You can always click on the monthly links toward the upper right of the page, to view more entries. Please feel free to comment (click on "Comments" below) to let me know what you think about this change. Once R2 is all done, I hope to make the blog more useful, and I also hope to make the blog contents into a more readable PDF file one day.

To wrap up, thank you to all the visitors to my blog, especially the regulars. I really appreciate the interest and feedback. Have a safe, healthy and happy 2007!

-Victor

*posted by Victor Franco at 4:30 PM* 2 COMMENTS

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## Sanded Battery Boxes

Today I sanded smooth the PVC battery boxes I purchased from Craig Smith. First I lightly dry-sanded the fronts and backs with 400 grit sand paper, and then I went back and wet-sanded with Gator Grit.



I tell you, the more I work with these, the more I appreciate what a work of art they are. Thank you Craig!

*posted by Victor Franco at 4:25 PM* 0 COMMENTS

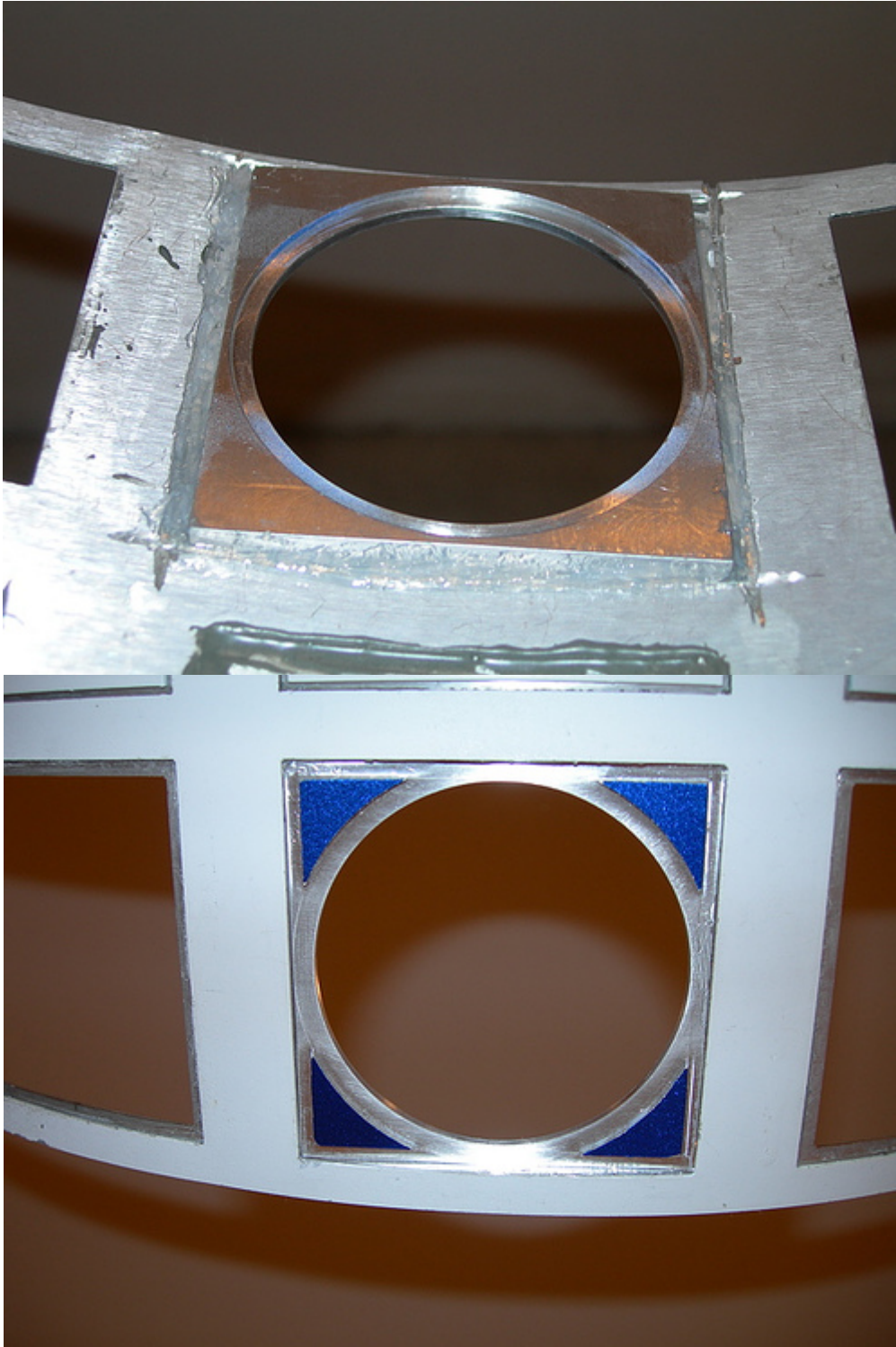
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TUESDAY, JANUARY 02, 2007

## Glued on Rear Power Coupler Frame

Tonight I used silicone to attach the rear power coupler frame to the inside of the back door. (You'll recall I knocked out the two rear coin returns when I was

bending the door to fit the body, I'll deal with those a bit later.)



I'm not 100% convinced that the silicone will hold for the long term, but I'm giving it a try. If it doesn't hold, I'll try again with JB Weld.

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*posted by Victor Franco at 6:07 PM* 0 COMMENTS

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WEDNESDAY, JANUARY 03, 2007

## Motor Homework

I can't claim I did much in the way of building tonight, but since I'm working on the drivetrain, I figured I better start studying up on the Saturn wiper motors I'm planning to use. I removed the bar that controls the windshield wipers.



Then I read up on how the connections to the motor work, and I reviewed Alex Kung's [summary](#) on 24 volt conversion, which I plan to implement.

*posted by Victor Franco at 10:15 PM* 2 COMMENTS

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FRIDAY, JANUARY 05, 2007

## Coin Returns Arrive

The coin returns from Wayne's run arrived today, and they look great.





I'm almost certainly going to use these on my droid, since my scratch-built coin returns are less than spectacular.

This culminates a pretty passive work week. I didn't really get any building done, hopefully I'll be more productive soon.

I'm also working on a wooden leg building tutorial, which I hope to finish soon.

*posted by Victor Franco at 8:19 PM* [0 COMMENTS](#)

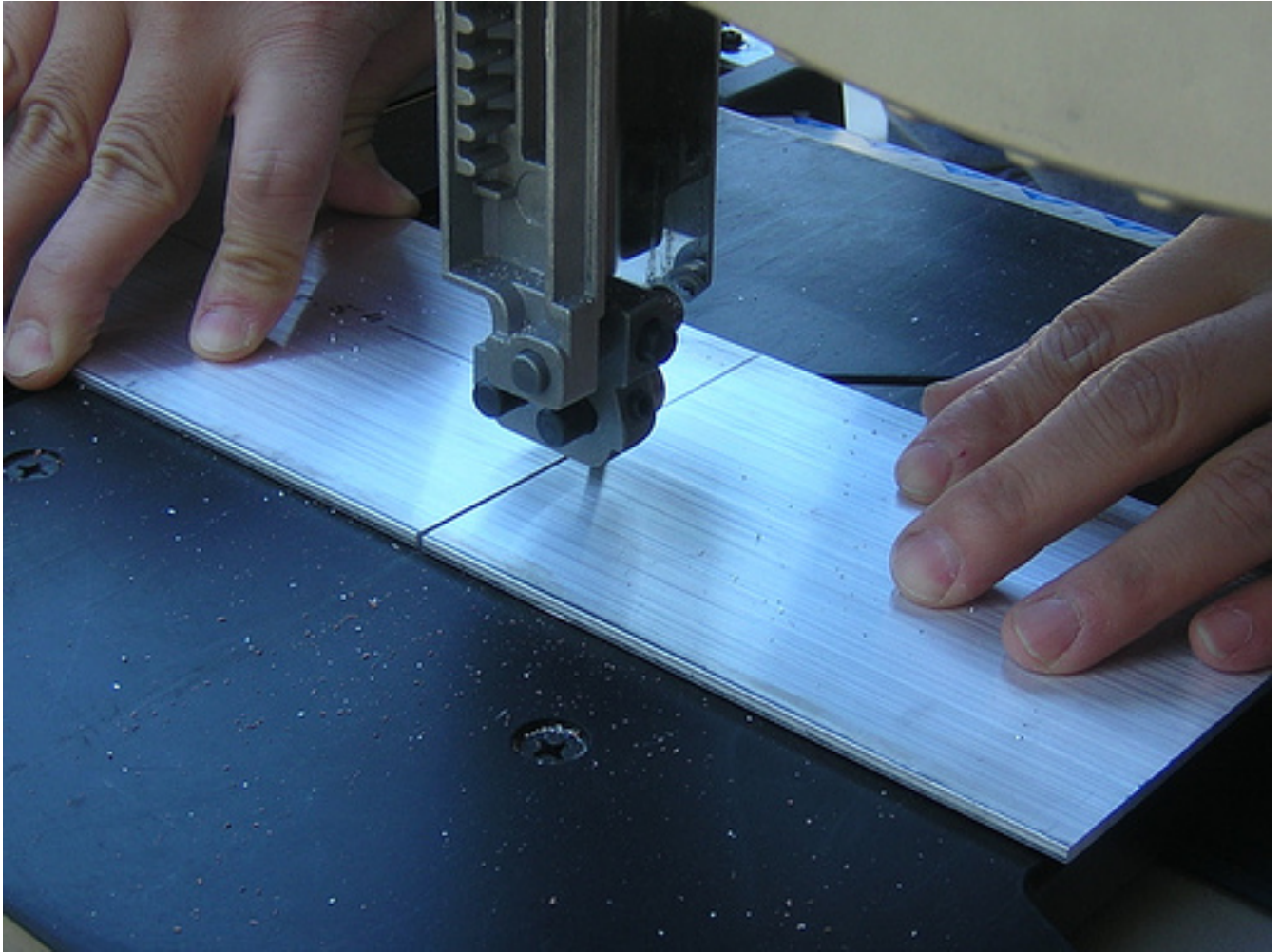
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SATURDAY, JANUARY 06, 2007

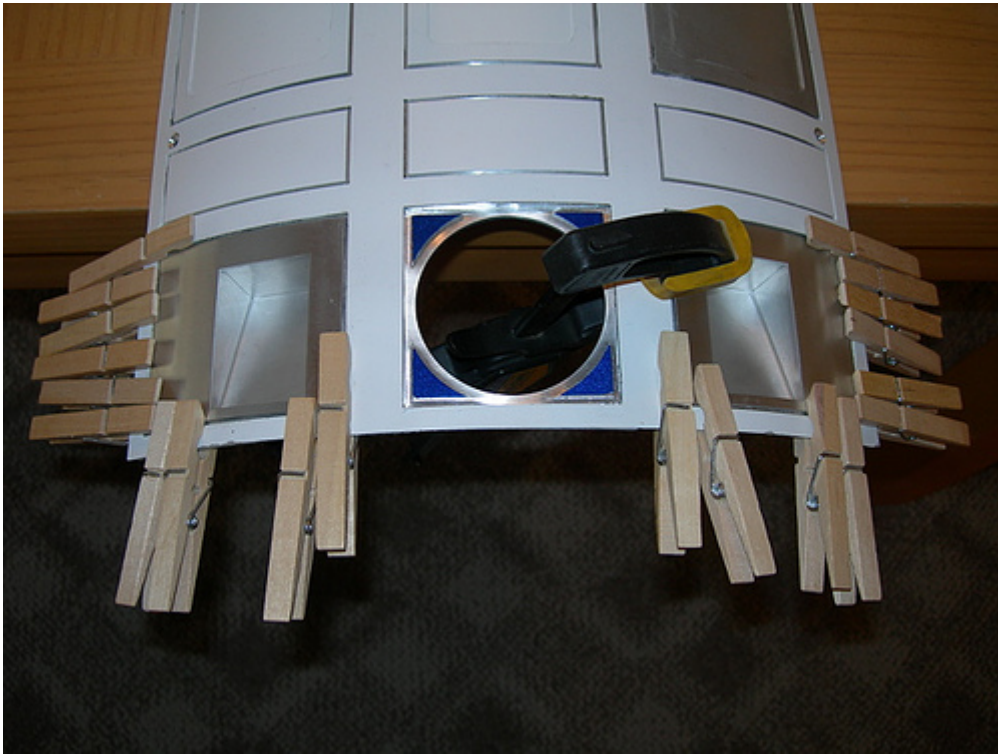
## One More Band Saw Cut for Drivetrain, Attached New Rear Coin Returns

One last, penultimate cut on the band saw for the drivetrain. I had bought too little aluminum 1/8"x4" stock, so I picked up some more earlier in the week, and

finally went to Kelvin's to have it cut today.



In the afternoon, I JB Welded Wayne's aluminum coin returns into the back door. I will work on the front coin return in the not-too-distant future.



*posted by Victor Franco at 8:19 PM* 0 COMMENTS

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SUNDAY, JANUARY 07, 2007

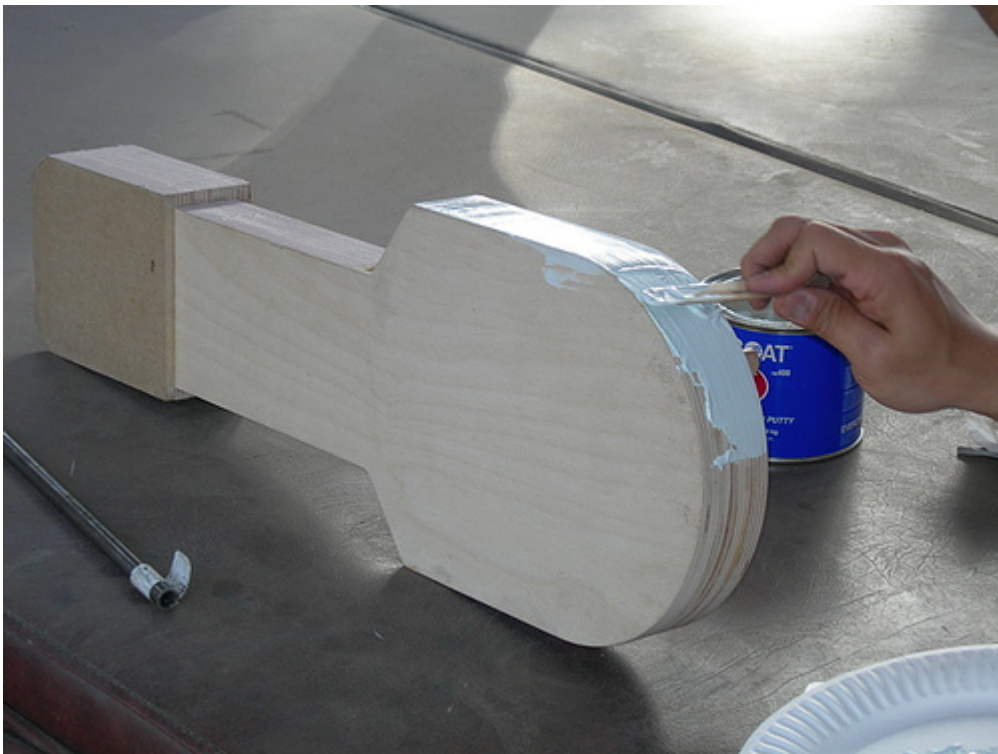
## **R2LA IV.5 - Leg Finishing**

Today was Mike Senna's leg-finishing session for the local R2 builders that purchased Matthew Henricks' wooden legs. It was also an excuse for others of us to just get together and have a good time.





Mike went over how to apply Bondo and/or Evercoat to even out the legs.



After applying the putty, Mike sanded the surface smooth.



Other details were covered, such as filling in the pockets for the under shoulder details.

But best of all, it gave me an opportunity to put on a Stormtrooper helmet. The benefits of this club never end.



Everyone went home happy, and a good time was had by all.  
*posted by Victor Franco at 8:45 PM* [2 COMMENTS](#)

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MONDAY, JANUARY 08, 2007

## More Back Door, Center Foot Shell Work

If you're ever feeling down, especially if you've just messed something up, or can't get something to work right, console yourself. You aren't as bad as I am.

How many times have I destroyed and repaired various parts of my back door now? I've lost count. Anyway, one of my new coin returns worked loose, so I did the JB Weld thing again. It's starting to look like Frankenstein back there.





The center foot shell was feeling neglected, so I filled in some remaining pinholes in the PVC with some super glue. I'll give that a final sanding (at least it should be final) tomorrow. With any luck, Mike and I will resume work on the foot shells soon.



I'm surprised I didn't glue the bottle to the foot shell.

*posted by Victor Franco at 10:32 PM* 0 COMMENTS

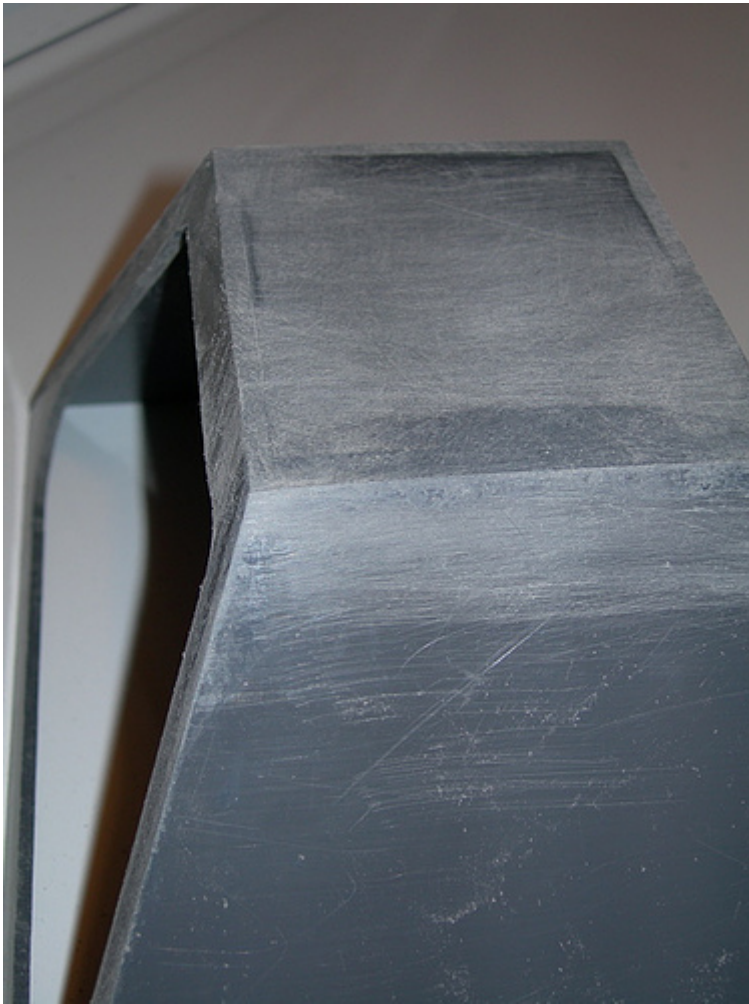
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TUESDAY, JANUARY 09, 2007

## Sanded Top of Center Foot Shell (Again)

Well, the JB Weld on the back door from last night seems to be holding, so I put the door back onto the droid.

I sanded down the super glue that I applied to the top of the center foot shell last night. Now the top of the foot shell is nice and flat, with no gaps or pinholes. I still need to sand and smooth down all the sides at some point.



*posted by Victor Franco at 9:20 PM* 0 COMMENTS

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THURSDAY, JANUARY 11, 2007

## Slow Week

Let's see if I can give the appearance of being busy, without really doing anything.

I ordered couple of [flasher circuits from allelectronics.com](#), after seeing them in action in Vince's and Russell's domes at the last two R2LA gatherings. I really like how they looked, so I'm going to experiment with them.

I also played around with my sounds on the CFSound III. Thanks to Mike, I'm able to rotate through a series of many sounds on input #1, and play distinct sounds on the other inputs. I'm manually grounding the inputs to trigger them for now. Once my remote arrives (which is another story...), I can use the remote to trigger them.



Roy Powers stopped by tonight to do some fact finding on the rails, nuts and bolts that help hold parts of R2 together.

Did that give the appearance of being busy? I didn't think so. Mike and I plan to resume work on the PVC foot shells on Sunday, so maybe that will make up for a slow week.

*posted by Victor Franco at 10:12 PM* 3 COMMENTS

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FRIDAY, JANUARY 12, 2007

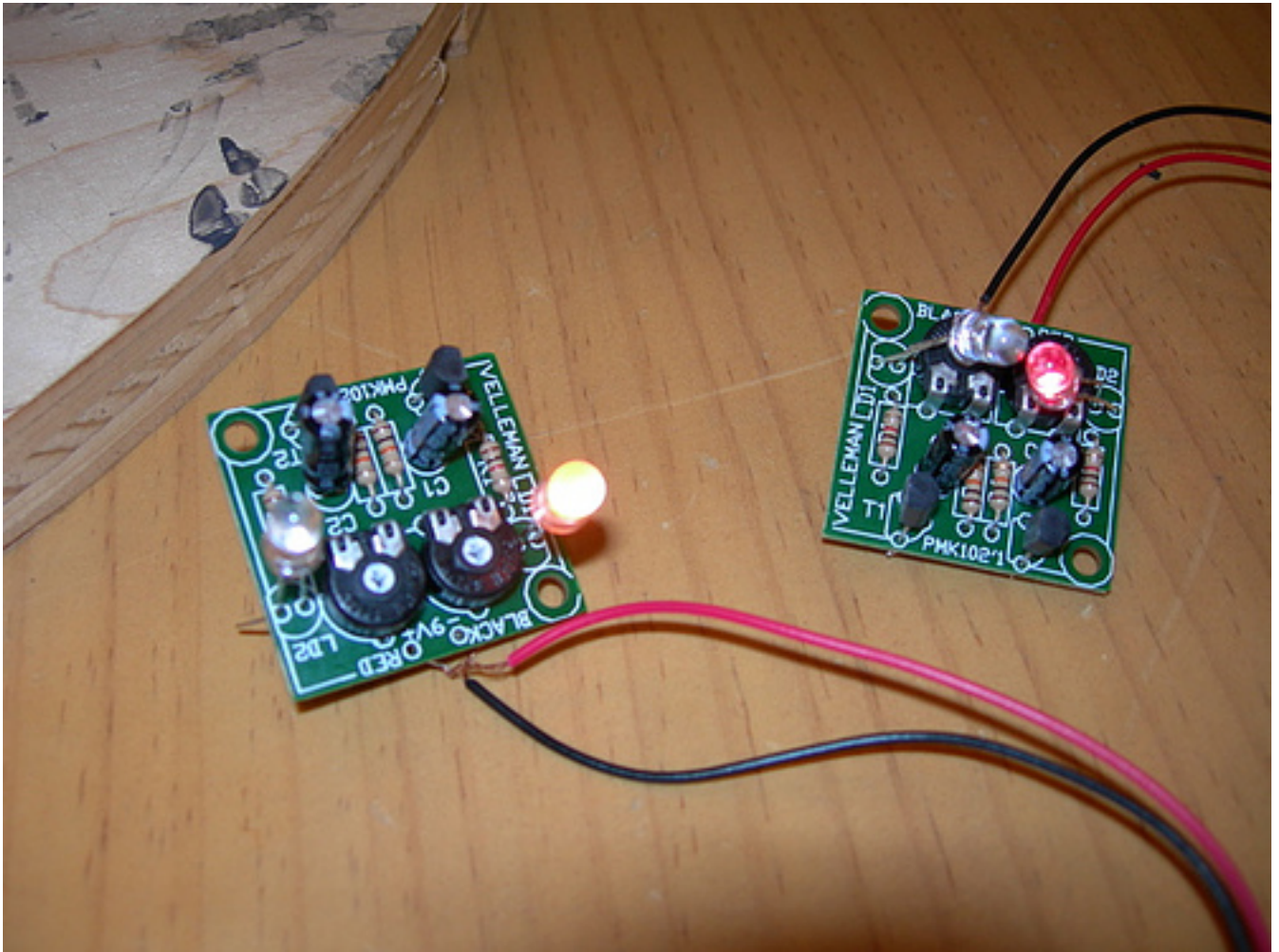
## Assembled New PSI Circuits

The flasher kits I ordered from allelectronics.com arrived today.

As cool as the fading PSI circuits are, I think I'd like to try having constant, full illumination for each color, so I'm trying these out.



I substituted my own red/blue and green/yellow superbright LEDs for the red ones that come with the kit. So far so good, but I need to play around with the diffusion in the dome a bit before I can declare success.



*posted by Victor Franco at 11:31 PM* 5 COMMENTS

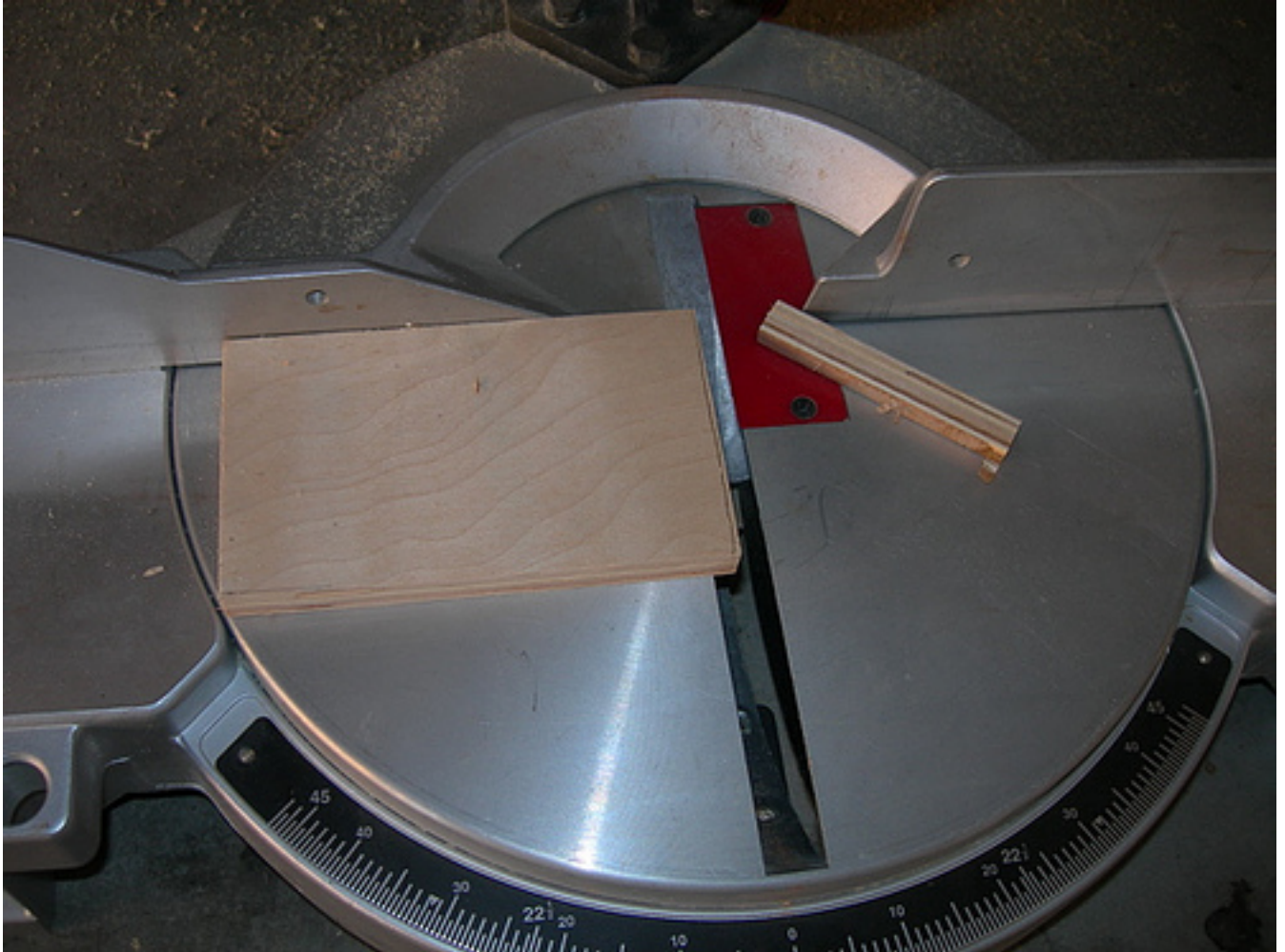
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SATURDAY, JANUARY 13, 2007

## Cut Out Rear Power Coupler Housing

Today I spent all of five minutes cutting out a housing made from wood for the rear power coupler.





This wooden housing will be glued down to the base of the frame. I plan to use Velcro to attach the aluminum power coupler to the housing.

While I could glue the housing down to the frame now, I'm going to wait so as not to impede access to the frame's interior. I figure it would be better to do this after all of the electronics and batteries have been fitted.





*posted by Victor Franco at 10:19 PM* 0 COMMENTS

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SUNDAY, JANUARY 14, 2007

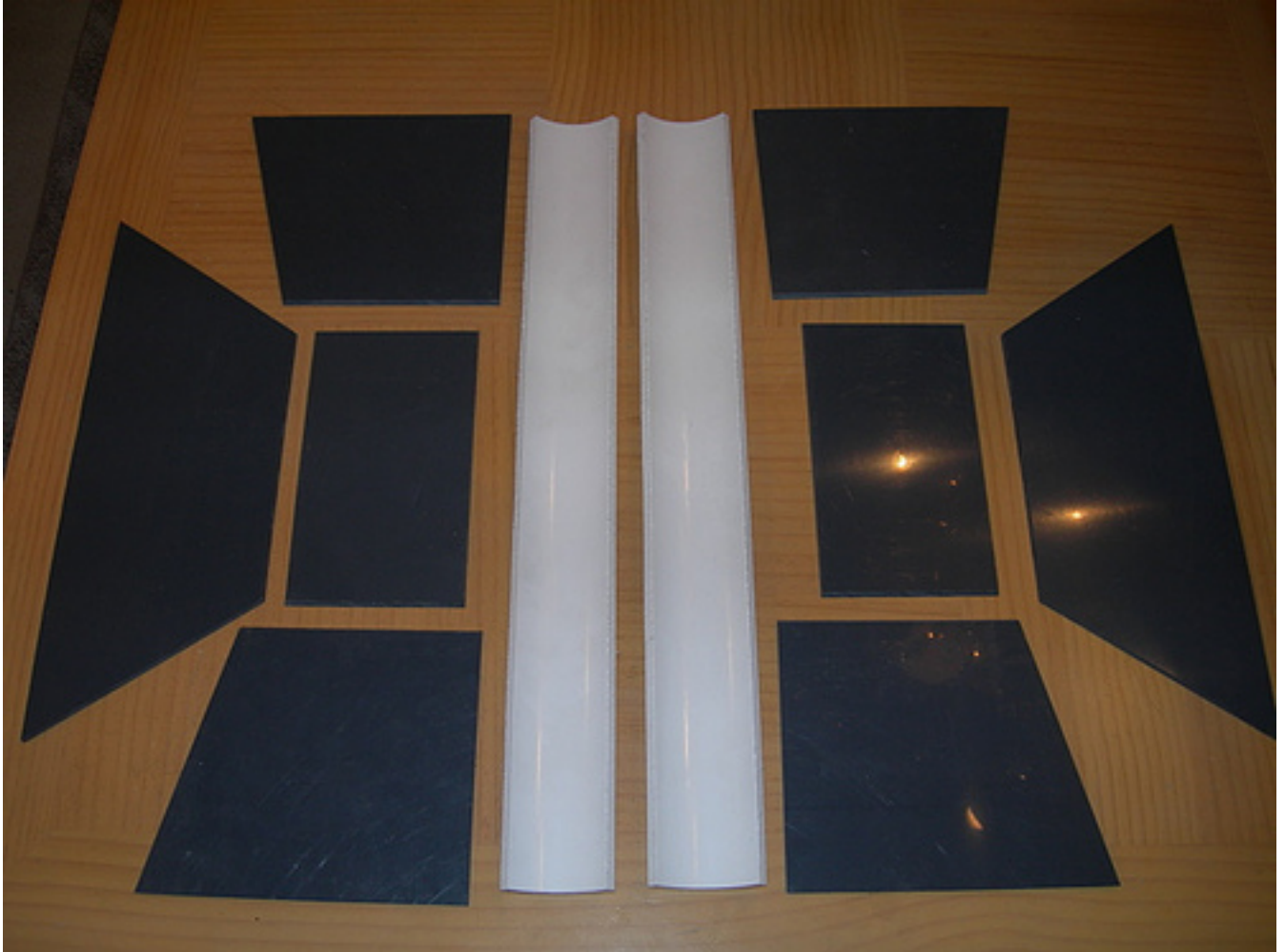
## **Resumed PVC Foot Shell Work, Swapped PSI Circuits**

After quite a while away from the PVC foot shells, Mike and I got together to resume work on them. Mike did all the stunts, I handled cinematography.



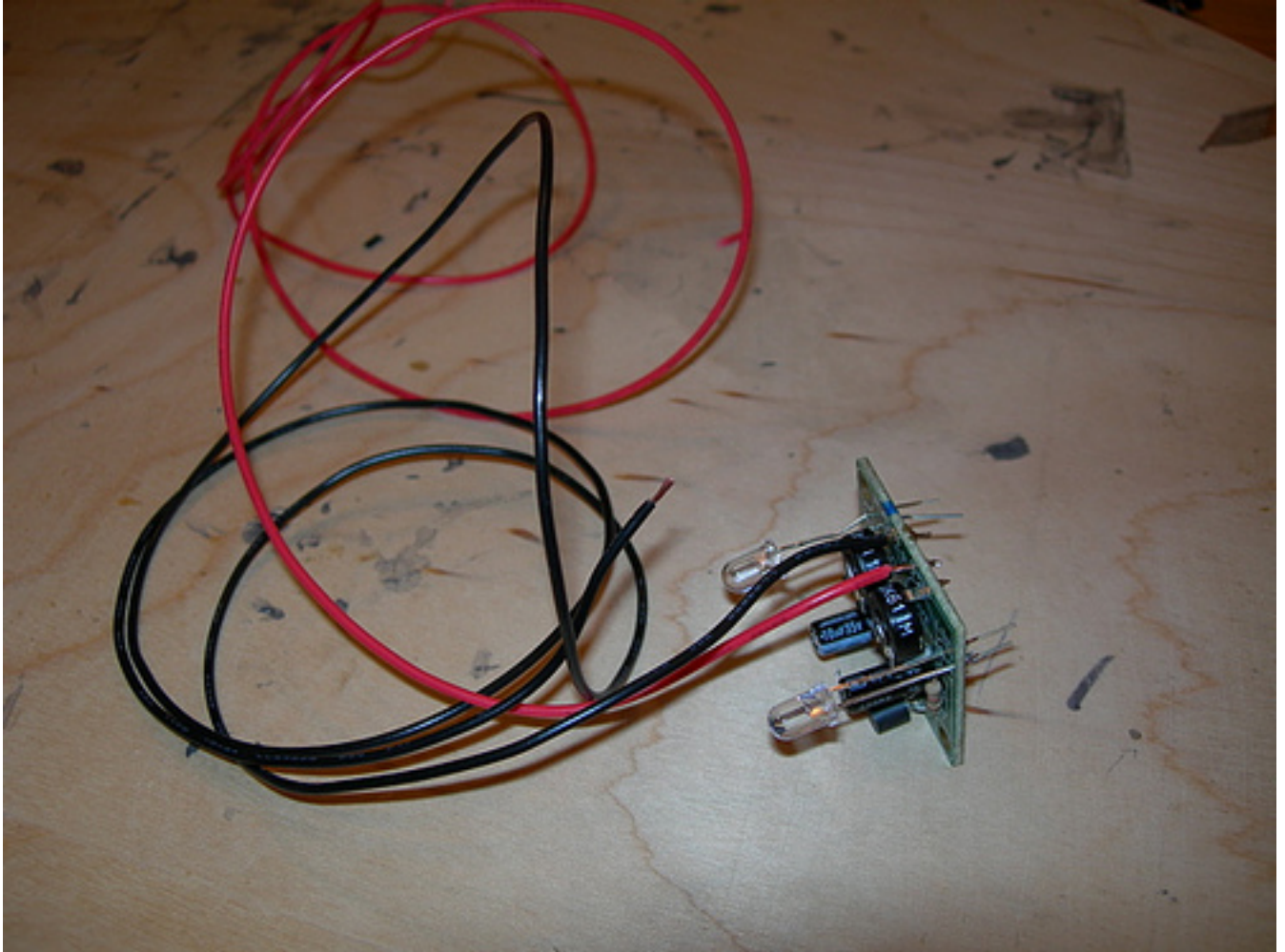
We recut the fronts and backs of the outer foot shells, after discovering a problem with the ones we cut earlier. We also cut the tops of both outer foot shells. The fronts, backs and tops will need to be trimmed to match the actual width of the foot shell. We are waiting until we finish constructing the inboard-side of the foot shell that has the battery box-curve to it, before we trim all of the other sides to size.

The angles on all of these are *crazy*. Thank goodness we can always take measurements from Mike's first droid.



When I got home, I worked on adding some wiring to my dome for the new PSI flasher circuits.





The diffusion is far from perfect, but I can work on that over time. I do find myself preferring the discrete flash operation to the fade.



*posted by Victor Franco at 10:39 PM* [2 COMMENTS](#)

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TUESDAY, JANUARY 16, 2007

## **R2LA IV DVD Arrived**

Yippee! Michael McMaster's R2LA IV DVD arrived today. Lots of fun-filled material, along with at least two Easter Eggs that I found. This served as the perfect excuse to get nothing done tonight. Not sure what I'll come up with for tomorrow's excuse.



Head on over to <http://n2citrus.com/artoo/dvd.html> for the fun.

*posted by Victor Franco at 10:00 PM* 0 COMMENTS

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WEDNESDAY, JANUARY 17, 2007

## Measuring & Marking Drivetrain

I spent some time tonight measuring and marking the aluminum tube that will make up the main part of the drivetrain. I will need help from a machine shop to



drill the holes for the axles, and maybe more help drilling additional holes.

I started taking measurements on the aluminum, and marked where I believe the axles will go. This is subject to many iterations of remeasuring and remarking.

*posted by Victor Franco at 10:21 PM* [2 COMMENTS](#)

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THURSDAY, JANUARY 18, 2007

## Drivetrain Woes

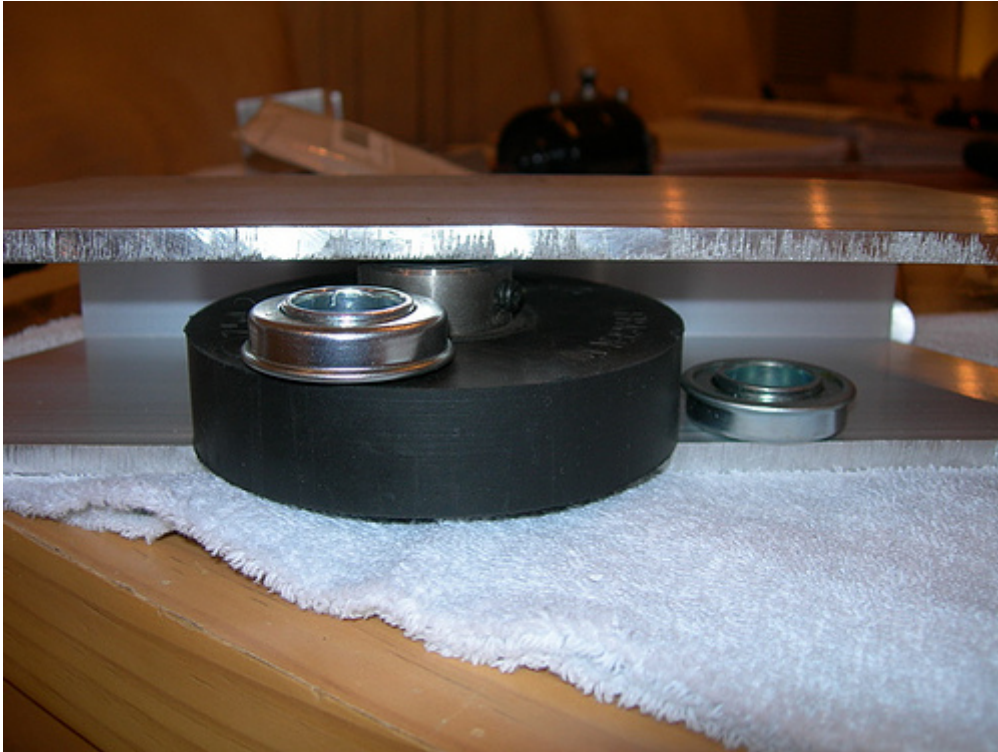
Okay, time to 'fess up. I'm suffering from a severe crisis of confidence in my drivetrain build. I'm moving forward (I purchased more 3/4" diameter steel for axles and shaft adapters today), even as I think I need to retreat. What's the problem? Well, where to start?

First, I should back up a bit and explain what my approach is. As I've written, I'm working on a modified version of the Heath (MacMillan) & Alex (Kung) drivetrain. I have chosen this drivetrain because it is designed to work with the Saturn windshield wiper motors, and it is a generally nice 2-wheel (per foot) drive. I've chosen the Saturn motors because I like the torque and worm-gear nature of the drive, plus it is relatively inexpensive and readily available. I realize it cannot free-wheel, but I like the fact that the droid won't roll downhill on its own either.

I was planning on using some nice bearings for the axles, but I'm finding that the outer diameter is too large to fit the 2x4. The bottom hangs over the lower cut, where the wheels are exposed to ride on the ground. I can't really raise the bearings, because that will raise the axles, which will raise the wheels, and potentially cause them to run into the inner surface of the 2x4. So I think these bearings are a no-go for this reason alone (but there's more).

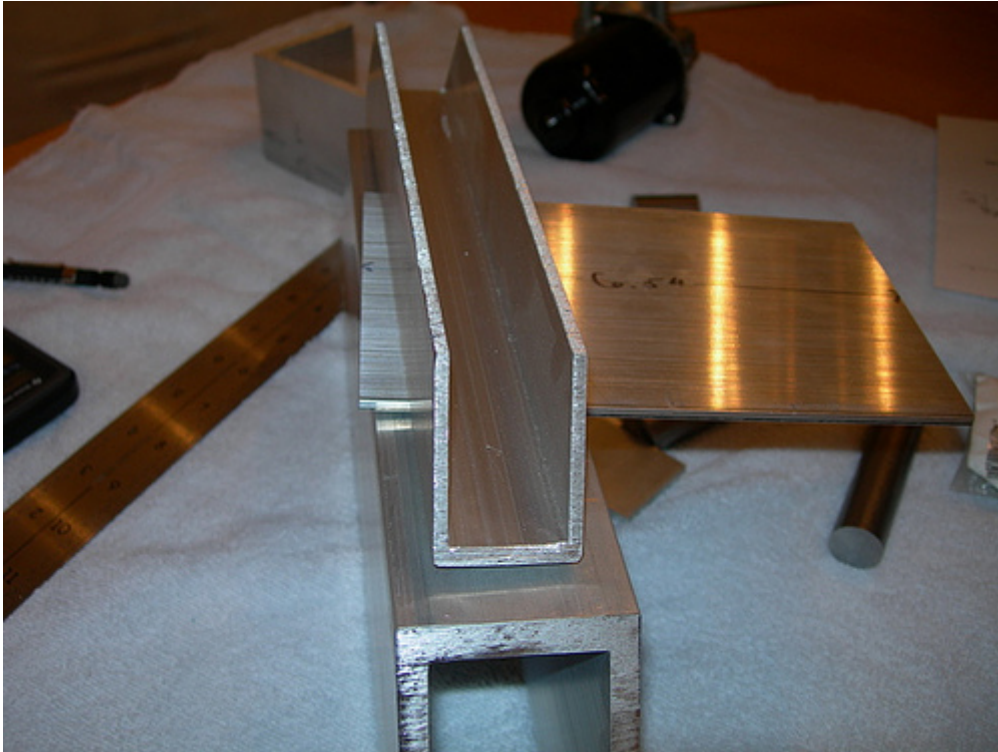


The aluminum 2x4 that I'm using as the main body of the drivetrain has a 1/4" thick wall, while the original H&A design called for a 1/8" thick wall. The bearings won't fit with the standard wheel I'm using, there's no room. In fact, there really isn't much room for a smaller bushing in there either, I'd have to file it down quite a bit.



Next problem. The H&A design calls for two "L" channels on top, but I have a single "U" channel. This does a poor job of accommodating the main bar that the motor mount hangs from. Furthermore, this channel must align with the top opening in the foot shell, and I have doubts that this is even possible with the channel I've chosen, though I'm not certain.





There are a boatload of problems beyond the ones I just listed, including (but not limited to):

- I did not cut out most of the siding of the 2x4, so there's no way to slide the main bar under the top of the 2x4 like the H&A plans dictate. The bar would have to ride on top.
- The main bar is 1/16" thinner than specified in the plans (is 1/8" thick, should be 3/16" thick). So far I have not found 3/16" thick stock that is 4" wide. This probably isn't a really big deal, but it means that the measurements for various holes will have to be adjusted by 1/16".
- If I were to proceed with the current approach, lots of other measurements will have to be readjusted. Instead of the motor mount hanging from below the top of the 2x4, it will hang from above it (an additional 1/4" of readjusting measurements). Thus lots of other locations for holes in the motor mount area need to be adjusted correspondingly.

And the list goes on, probably including stuff I haven't even thought about yet.

I'm seriously considering scrapping most of the work I've done so far, and starting over with a 1/8" thick-wall 2x4, with cuts more closely following the H&A design. I need to study all of this some more.

It's really frustrating. Once this and the foot shells are done, the droid is ready for wire-up and motors, and then it will be complete. But I have no idea how long this is going to take. Staring at it nightly and shaking my head doesn't seem to be making it go any faster. This is the 80/20 rule in all its glory.

Maybe if I only stare harder...

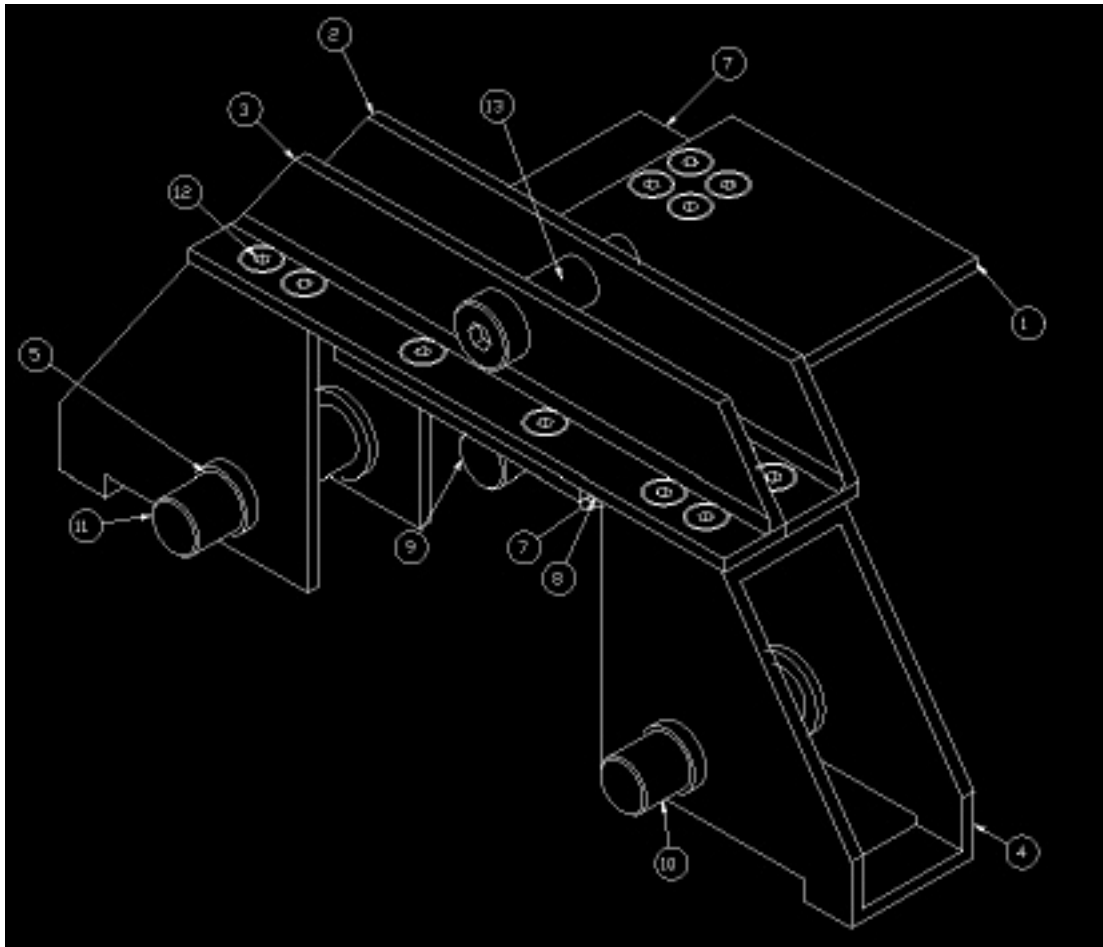
*posted by Victor Franco at 10:44 PM* 3 COMMENTS

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SATURDAY, JANUARY 20, 2007

## Road to Recovery

Okay, I think I'm done pouting (for now, at least). Here's the current plan for the drivetrain, which is spec'd to look as follows:



And here's what one of Mike's looks like, from R2LA III's emergency repair:



First, I'm going to cut out part of the top of the main rectangular tube. That way, the main bar from which the motor mount hangs will be at the specified height, rather than riding on top of or beneath the tube.

Second, I ordered some new aluminum online from [Discount Steel](#). Specifically, I ordered a 4"x6.5"x3/16" thick aluminum bar that perfectly matches the H&A plans. Once I locate it in the proper place, everything will be to spec.

Third, I ordered some aluminum L-bars to ride on top of the main tube, per the H&A plans. It will need to be trimmed a bit, but I've done that before.

Fourth, I haven't totally decided what to do with the bearings since they overshoot the bottom of the tube where I cut it earlier, so I may use a simple flanged bushing, which is also per the H&A spec.

Finally, while I was ordering more aluminum, I decided to order some extra 2"x4"x3/16" rectangular tube, but this time I ordered four shorter segments, which also match the H&A plans.

To summarize, within a week I should have all the main pieces I need to reproduce a replica of the H&A drivetrain, but I may be able to salvage the work I have.

*posted by Victor Franco at 9:13 PM* 0 COMMENTS

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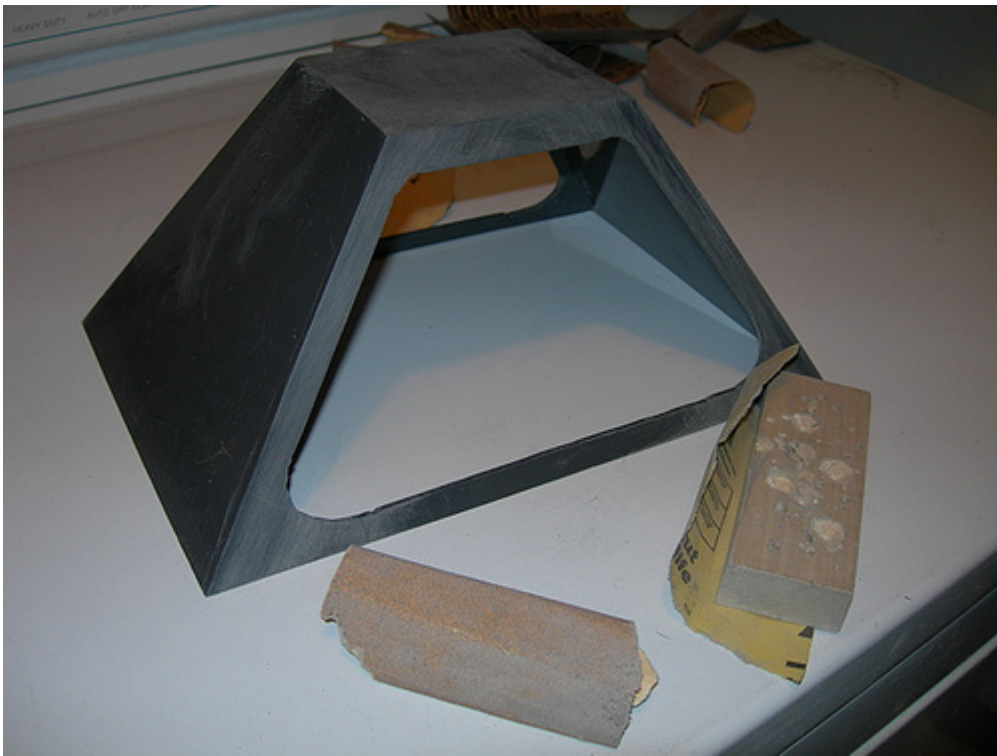
WEDNESDAY, JANUARY 24, 2007

## Started Sanding Sides of Center Foot Shell

Looking for anything productive to do during the week, I recalled that the side edges of the partially glued up center foot shell needed sanding.

The original glue-up can be found [here](#).

Tonight I was able to sand most of the edges very smooth. There are some very thin lines that will need to be filled (likely with superglue), and then a final sanding should do it. One corner started to work its way loose, so I avoided sanding that area and I will reglue it.



*posted by Victor Franco at 9:07 PM* 0 COMMENTS

THURSDAY, JANUARY 25, 2007

## More Center Foot Shell Cleanup

More of the same from yesterday. Before going to bed last night, I glued down the loose corner of the center foot shell, and used a toothpick to lightly apply some superglue to a seam or two.

Tonight I sanded all that down smooth. I did a tiny bit more filling of the seam where I reglued the corner. Tomorrow I'll sand that smooth, and this part of the foot shell should be set.

The center foot shell is awaiting the glue-up of the bottom "window" strips of PVC, and those strips still need to be cut down to size. That will get done in it's own time.

*posted by Victor Franco at 10:29 PM* [0 COMMENTS](#)

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FRIDAY, JANUARY 26, 2007

## Finished Sanding Center Foot Shell

Tonight I sanded down the last bit of seam filler on the top portion of the center foot shell. Saturday Mike and I plan to resume work on the remaining cuts for the outer foot shells.

*posted by Victor Franco at 11:46 PM* [0 COMMENTS](#)

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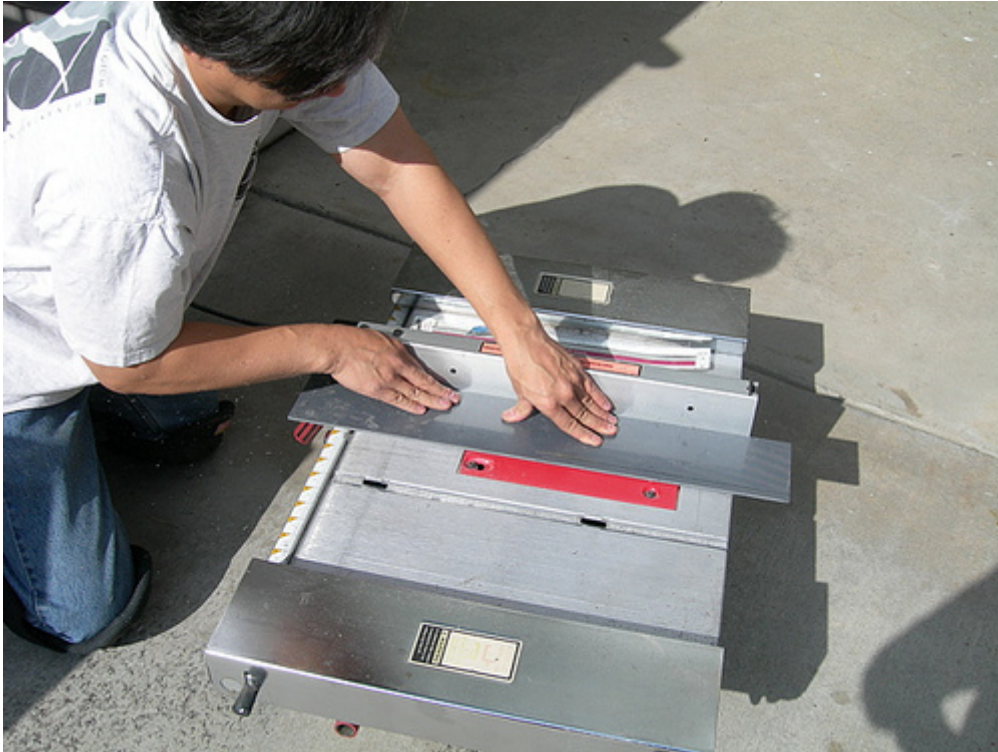
SATURDAY, JANUARY 27, 2007

## Worked on Vertical Part of Outer Foot Shells

Mike and I were able to put in just a little time on the outer foot shells today.

This time we concentrated on the flat, vertical part of the inboard side of the feet. This is area where the battery boxes rest against the feet. We [already cut the curve](#) a few weeks ago from PVC pipe.

First Mike cut some 3.5" sections of 1/8" PVC.

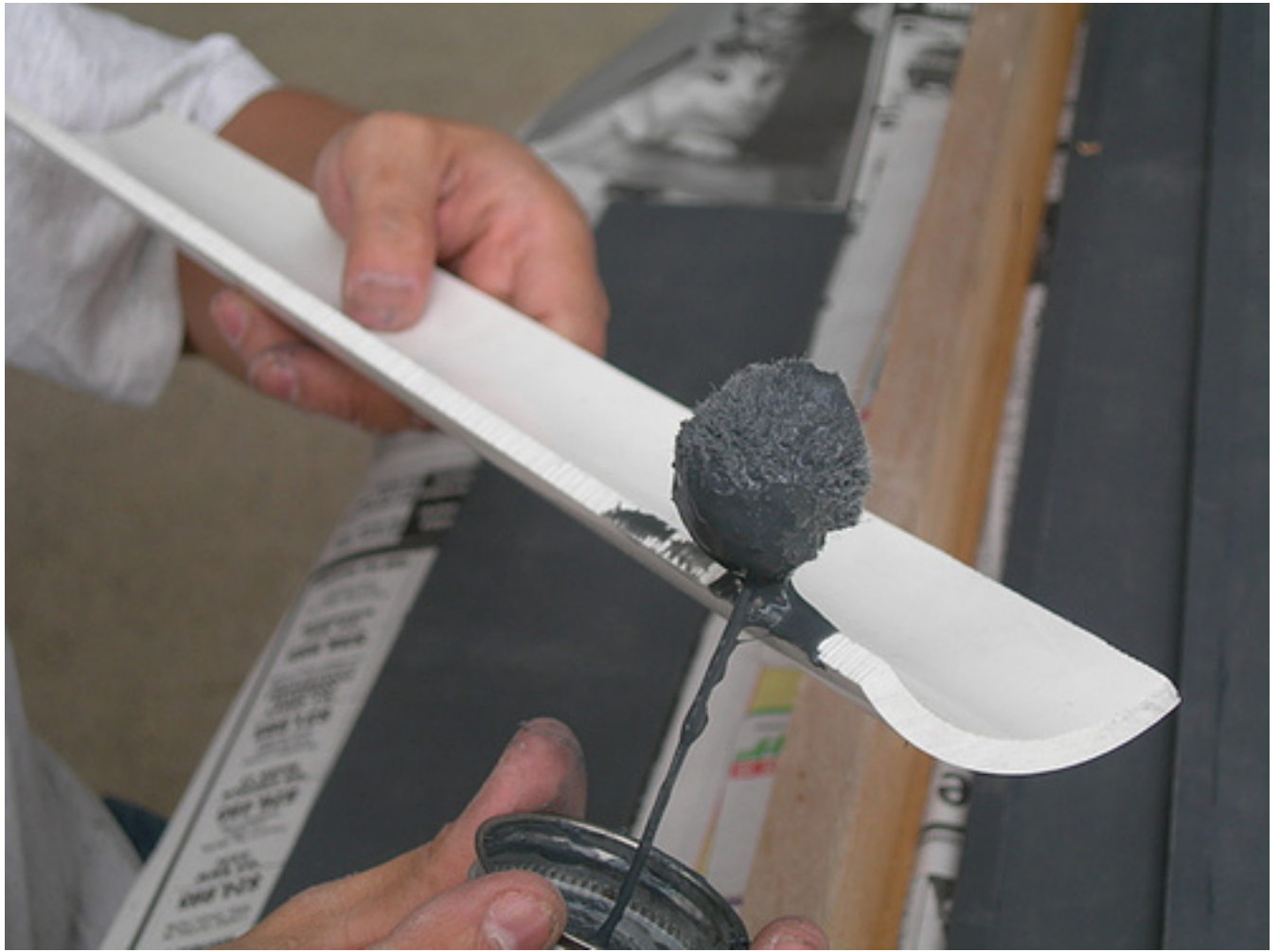


Then he cut a series of small strips to help double the thickness of the PVC, where it will meet the 1/4"-thick pipe segment. We glued those in place.





Finally, we glued the quarter section of PVC pipe to the flat area we just cut. Obviously this all needs to be cut down to size later.





Tomorrow I plan to glue another strip behind the two surfaces where they meet, to help further bond them together.

*posted by Victor Franco at 8:50 PM* [0 COMMENTS](#)

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SUNDAY, JANUARY 28, 2007

## Drilled & Tapped Shaft Adapters

Today I worked on the shaft adapters that will attach to the motors. These are required because the shafts coming out of the motors are only 8mm in diameter, whereas the gears that will drive the chain have a 3/4" inner diameter. I'm using a 1.25" segment of steel rod, per the H&A drivetrain blueprints.

Mike has a handy tool that he let me borrow, that helps to center a hole in the steel rod I'm using for the shaft adapter. The tool has a pre-centered hole on one end, and it lets you place a blank rod in the other. The drill bit slides through the hole and then drills a centered hole into the blank.





I only need two shaft adapters, one for each motor, but I actually built a total of four just in case. I drilled two with a  $17/64$ " bit, and then went back and drilled two more. (Actually, now that I think about it, I do need a third one for the dome

motor.)



Next, I tapped the shaft adapters with an M8 tap, to match the threads on the motors.



The adapters appear to fit the Saturn wiper motors well. I still need to grind some material out around the shaft adapter hole on the motor side, because the shaft adapter needs to fit snugly up against the motor body. Eventually a 1/8" diameter hole for a steel pin will be drilled and the pin inserted, perpendicular to the shaft at its base. This will help lock the shaft adapter to the shaft and prevent shearing, which is prone to happening when running the motors converted from 12 volts to 24 volts, which I plan to do.





*posted by Victor Franco at 9:56 PM* 0 COMMENTS

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MONDAY, JANUARY 29, 2007

## Published Leg Building Tutorial

Tonight I put the finishing touches on my wooden leg building tutorial, and uploaded it.

<http://pw2.netcom.com/~artoodetoo/LegTutorial.pdf>

This is a 50-page manifesto (more rambling but less dangerous than the Unibomber's), with plenty of pictures to help illustrate each step. It goes well with leg building tutorial on the [R2LA III DVD](#).

*posted by Victor Franco at 11:26 PM* 1 COMMENTS

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TUESDAY, JANUARY 30, 2007

## Glued Foot Shell Backing Strip, More Aluminum Arrives

Tonight I glued down the backing strips for each of the two foot shells, where the curved part joins the vertical area. This strip of PVC overlaps the two connected pieces, and helps strengthen the overall bond.





The aluminum I ordered from Discount Steel arrived. I didn't unwrap it, as it was apparent that there were a lot of metal shavings in the plastic, and I didn't want to deal with that tonight. But this should help get my drivetrain back in gear (so to speak).





posted by Victor Franco at 9:50 PM 0 COMMENTS

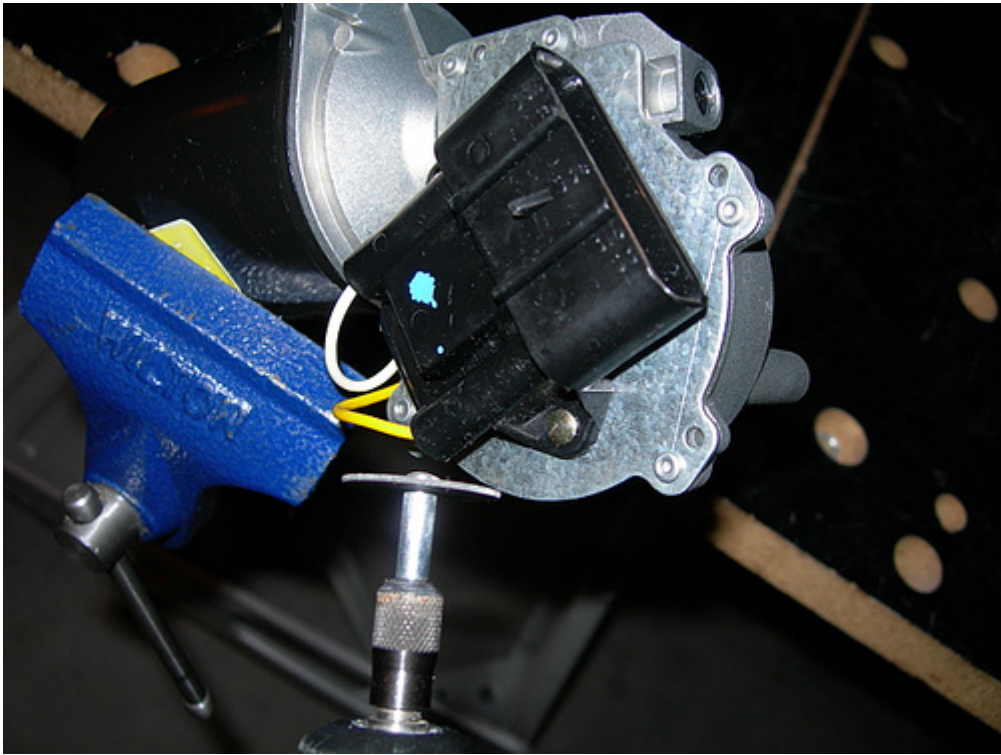
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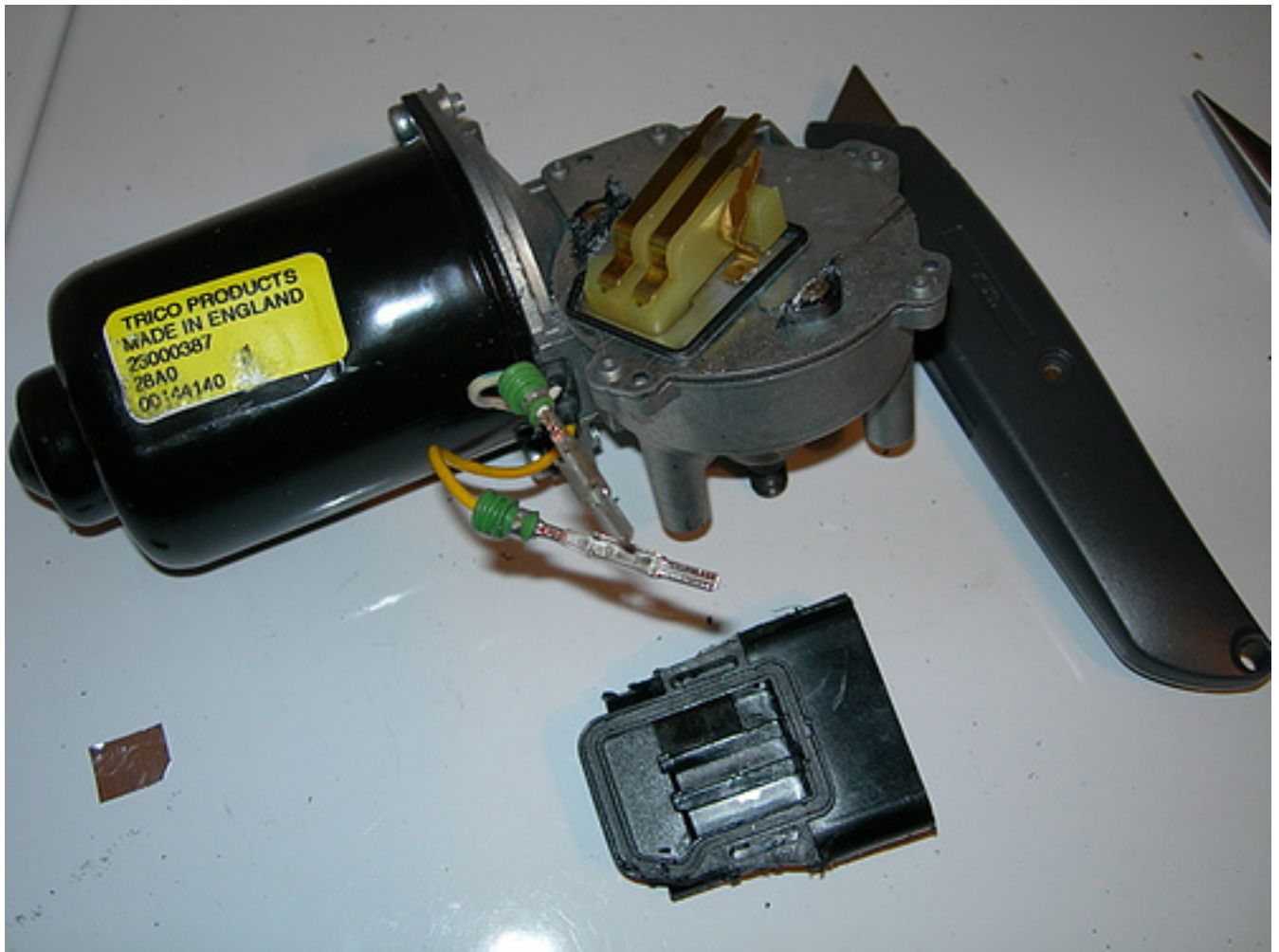
THURSDAY, FEBRUARY 01, 2007

## Hacked on Motors

After 19 months since I [acquired my Saturn wiper motors](#), I finally started working on them. I hacked on three of the motors tonight, and I have some spares that I'll eventually work on later.

The first thing that needs to go is the black plastic power connector. I placed the motor in a vise and used a hacksaw to saw at the plastic around the rivets until the housing came off.



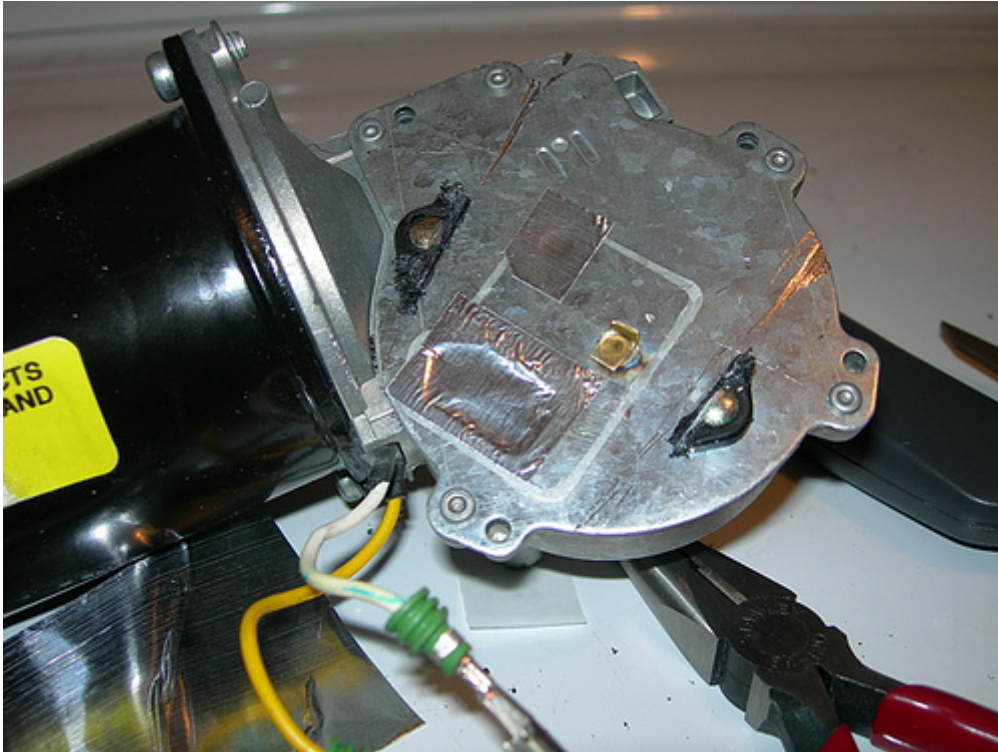


There is a yellowish plastic block underneath the power connector that contains metal leads into the motor. Two of the leads are connected to this block, and the whole assembly pulls out easily. A third metal lead has to be snapped off.



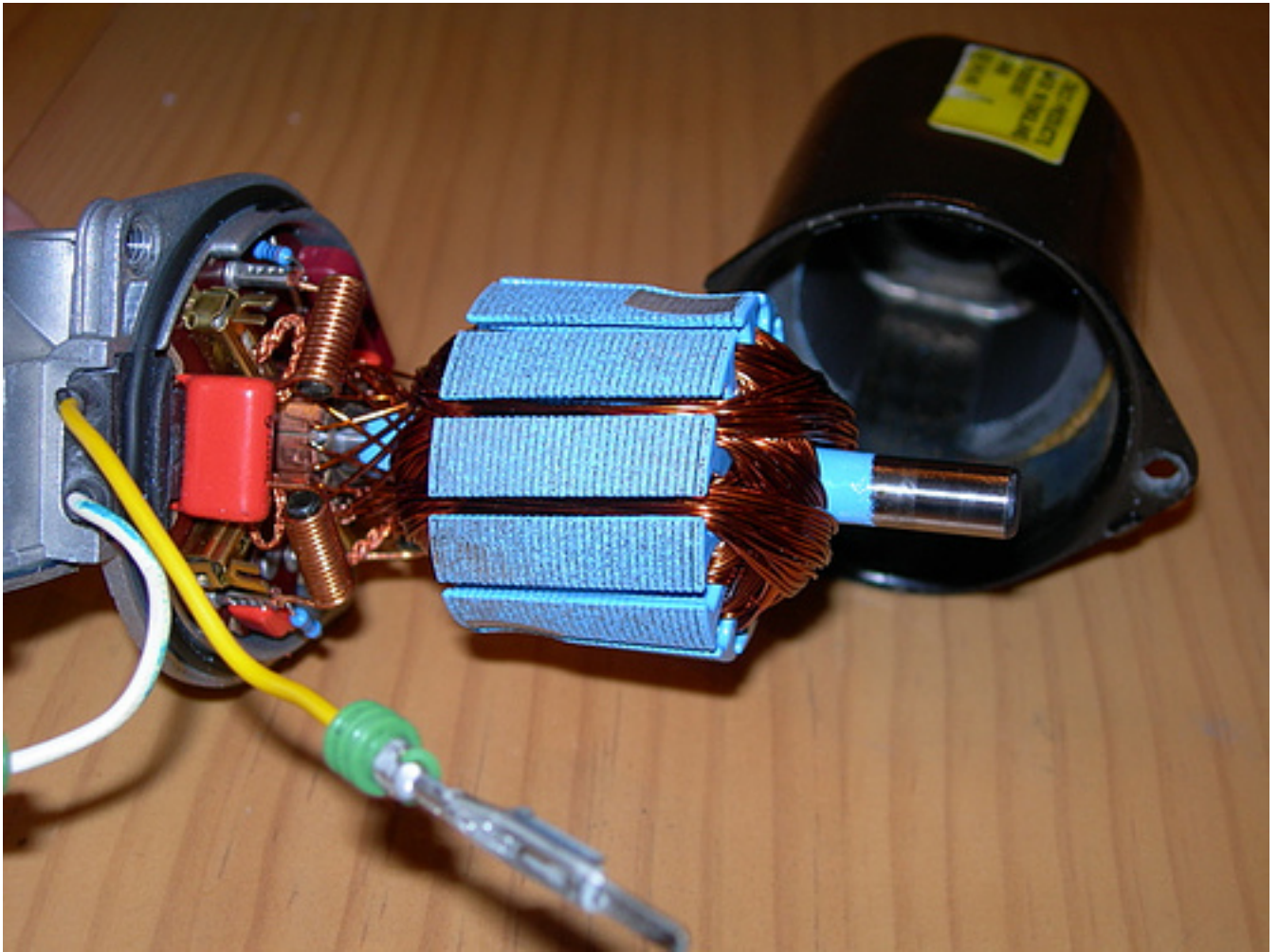


Once the leads have been removed, it's time to cover up the holes with a little foil tape.



Tonight, for the first, time, I applied power (12 volts) to the motors. They all appeared to be working properly, from what I could tell. I tried both forward and backward polarities.

I couldn't resist taking a peek inside one of the motors, since I will be modifying them soon using Alex Kung's 24v conversion tutorial.



*posted by Victor Franco at 9:32 PM* 0 COMMENTS

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SATURDAY, FEBRUARY 03, 2007

## **Cut and Glued Strips at Bottom of Curve for Outer Feet**

Last weekend Mike and I worked on the top end of the curve of the outer foot shells. This week we worked on the bottom of the curve.

We cut two strips of 1/4" styrene for each foot shell. One strip was 5/8" wide, the other 7/8" wide. They only need to be 1/2" wide, but we cut them wider so that we can glue them together and trim them as a pair. The reason for the extra 1/4" on one of the strips will be apparent in a moment.

I made the first 5/8" cut, and it turned out less than spectacular. Mike wisely decided to do the subsequent cuts.





Mike chopped the strips, which were about 4' long, down to size on the miter saw.



Next, we glued the two strips together.





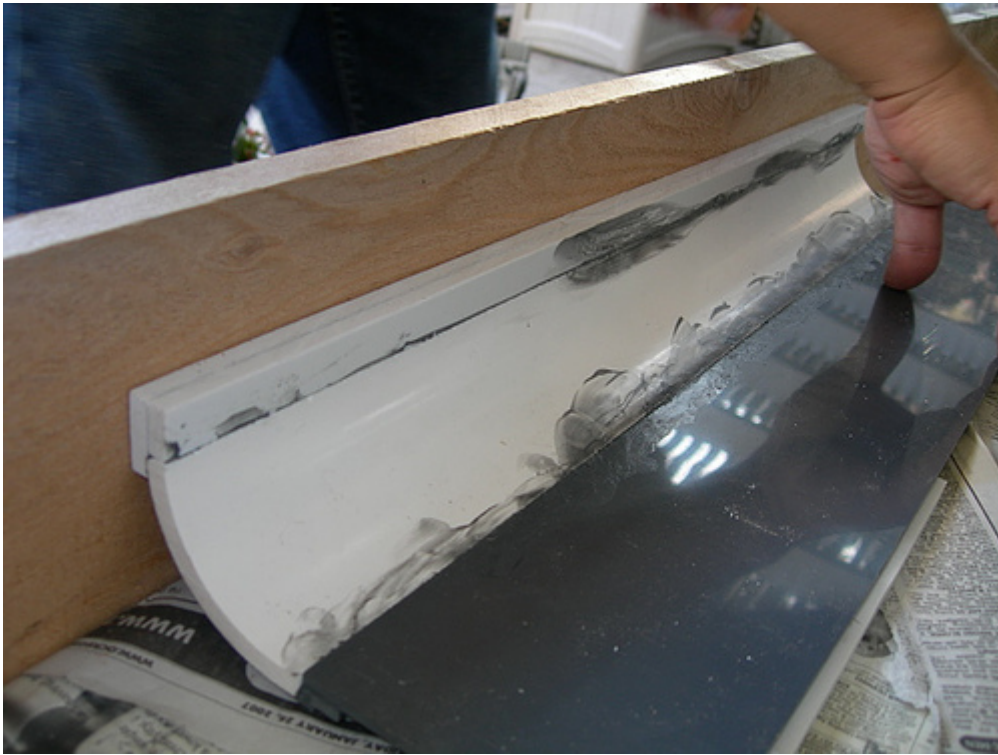


Once the PVC glue had dried and the two pieces were bonded, Mike cut the glued up pair down so that the piece that is visible to the outside world was 1/2" wide.





The end result is that we have a continuation of the curve at the bottom of the foot. The whole thing is rotated 90 degrees for glue up. The pieces will be trimmed to size, sanded and finished in due time. It may not look pretty now, but trust me, it will later.



*posted by Victor Franco at 7:41 PM* 0 COMMENTS

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SUNDAY, FEBRUARY 04, 2007

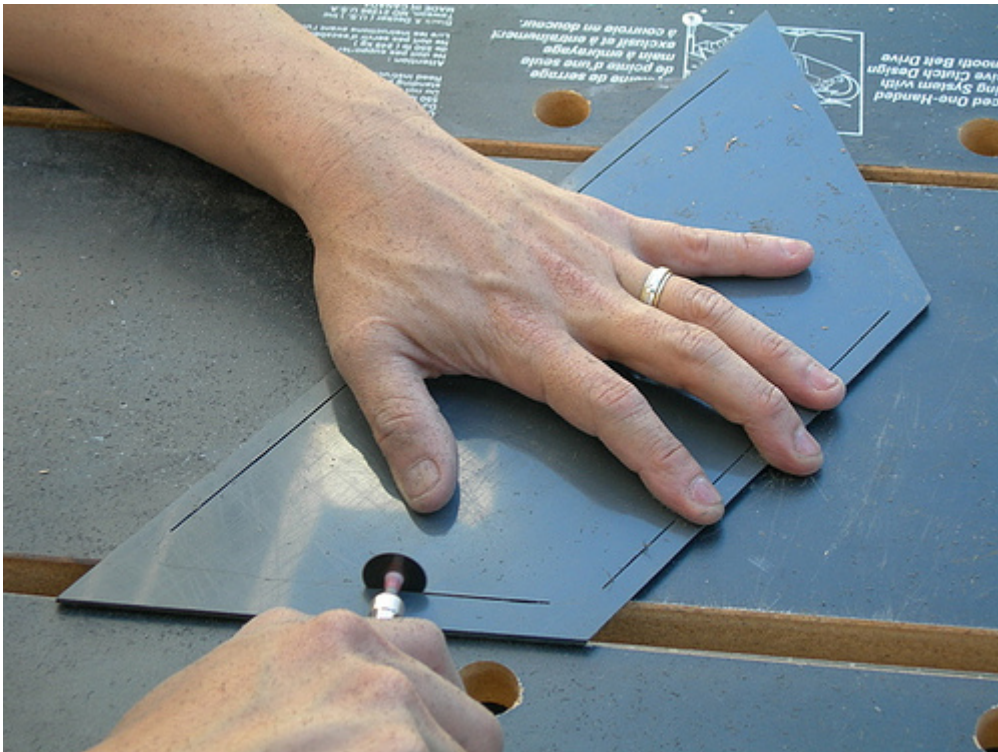
## Doors Cut for Outer Foot Shells

I have to admit, R2 building has been mostly a spectator sport for me when it comes to the foot shell build, and today was no exception. But it really is for the best. Also, keep in mind Mike is building himself a set of foot shells, so we're doing a pair of these.

Today Mike cut the doors for the outer feet. He started by removing one of the doors from his first R2, and tracing a line with a pin on the PVC.



Next, it was a matter of cutting along the lines. The straight parts of the doors were cut out with a Dremel and a mini saw blade attachment.



The curved corners were milled out by using a small drill bit on the Dremel.



Learning from experience, we used a thinner bit than the one used for the center foot shell. This allows us to sand the edges of the doors down so that the proper 1/8" gap can be made to size. On the center foot shells, we used a 1/8" bit, and that didn't leave much of a margin for error.



They turned out great!



I plan to glue up the top, front, back and one side (the side with the door) during the week. The next time Mike and I get together (and that could be a couple of weeks or more), we intend to trim the remaining oversized areas down, and then start gluing up the rest. The end is in sight! In the meantime, I need to get back to work on that drivetrain...

*posted by Victor Franco at 7:56 PM* 0 COMMENTS

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MONDAY, FEBRUARY 05, 2007

## Goofed Up Motor

If you're ever going in for surgery and you see me behind the mask, get off the table and run.

Tonight I attempted the 24 volt conversion on one of my Trico Saturn windshield wiper motors. Somehow, some way, I managed to render the motor dead. I don't know exactly what went wrong. This is why I bought spare motors, though. I guess I'll try again on another motor, I just hope I don't make the same mistake (or any new ones).

*posted by Victor Franco at 11:14 PM* 0 COMMENTS

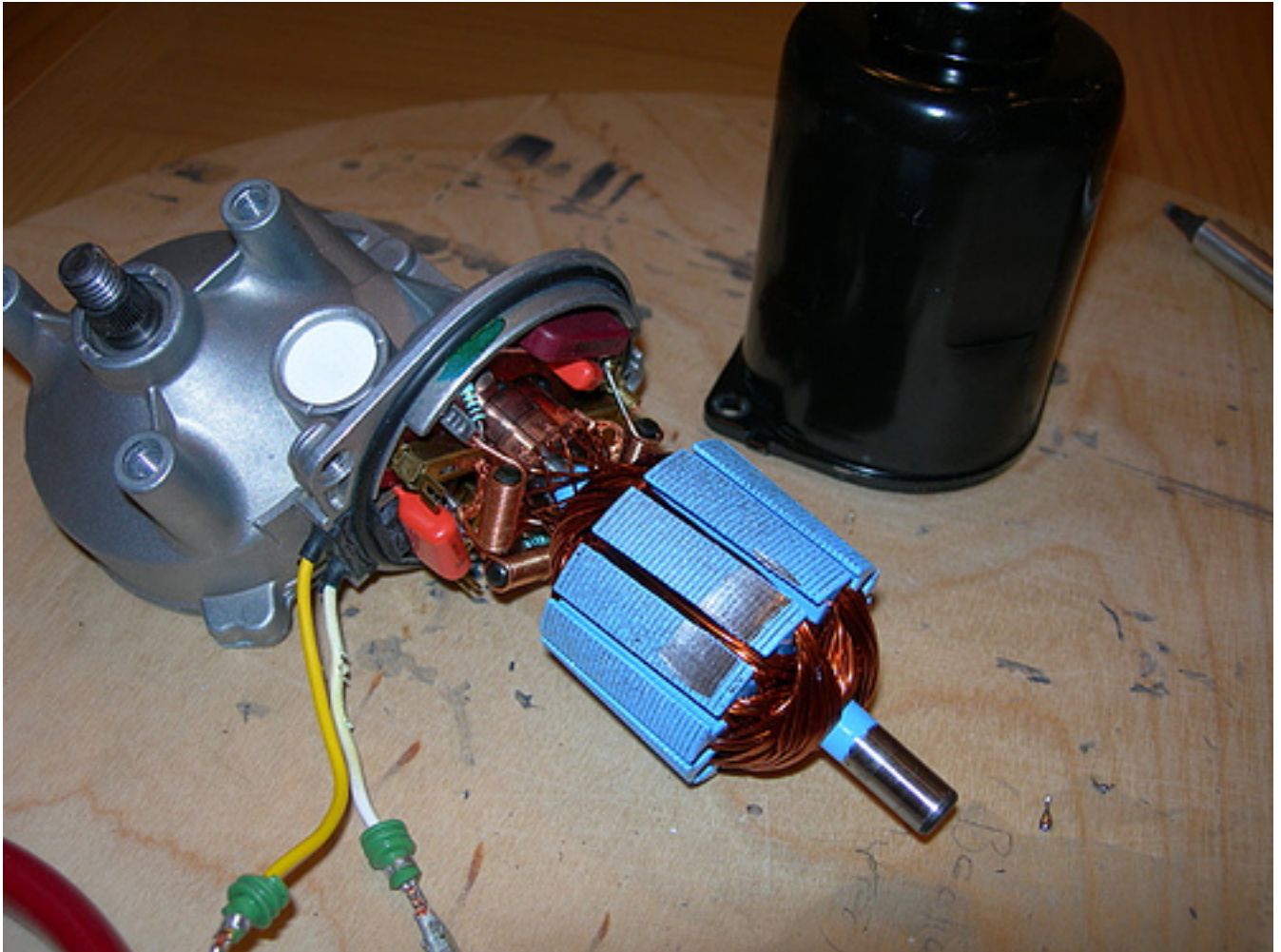
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TUESDAY, FEBRUARY 06, 2007

## Motor Conversion Success

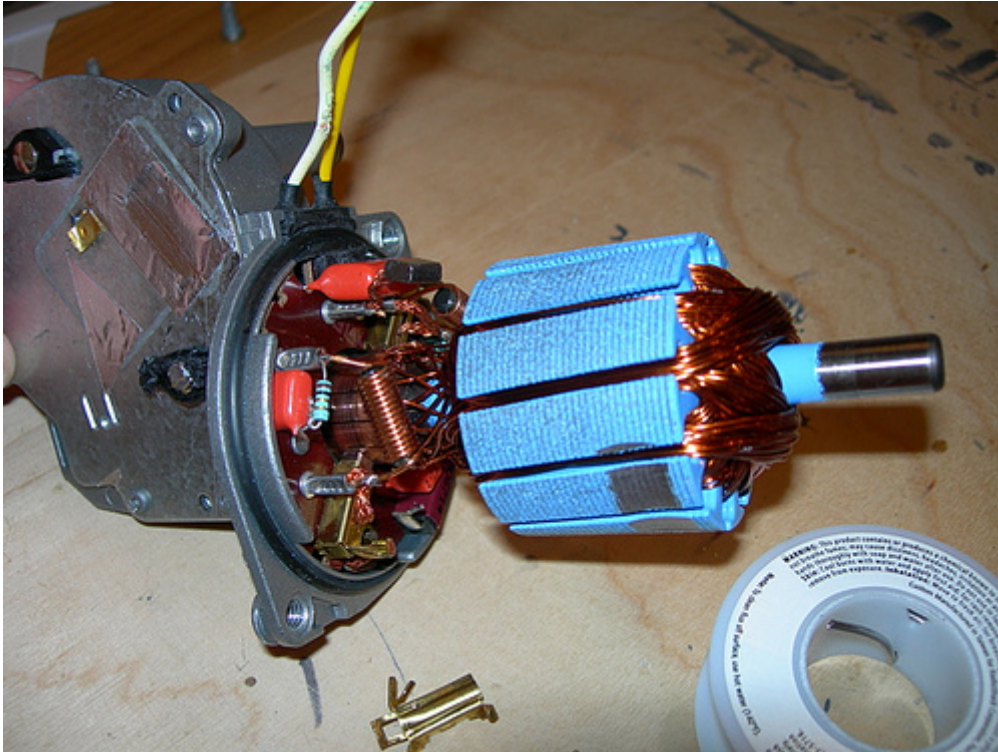
After last night's botched motor surgery, I was five-for-five in successfully executing Alex Kung's [Saturn wiper motor conversion tutorial](#). I was more careful tonight with the removal of various parts, and that paid off.

First, I removed the motor case, of course.

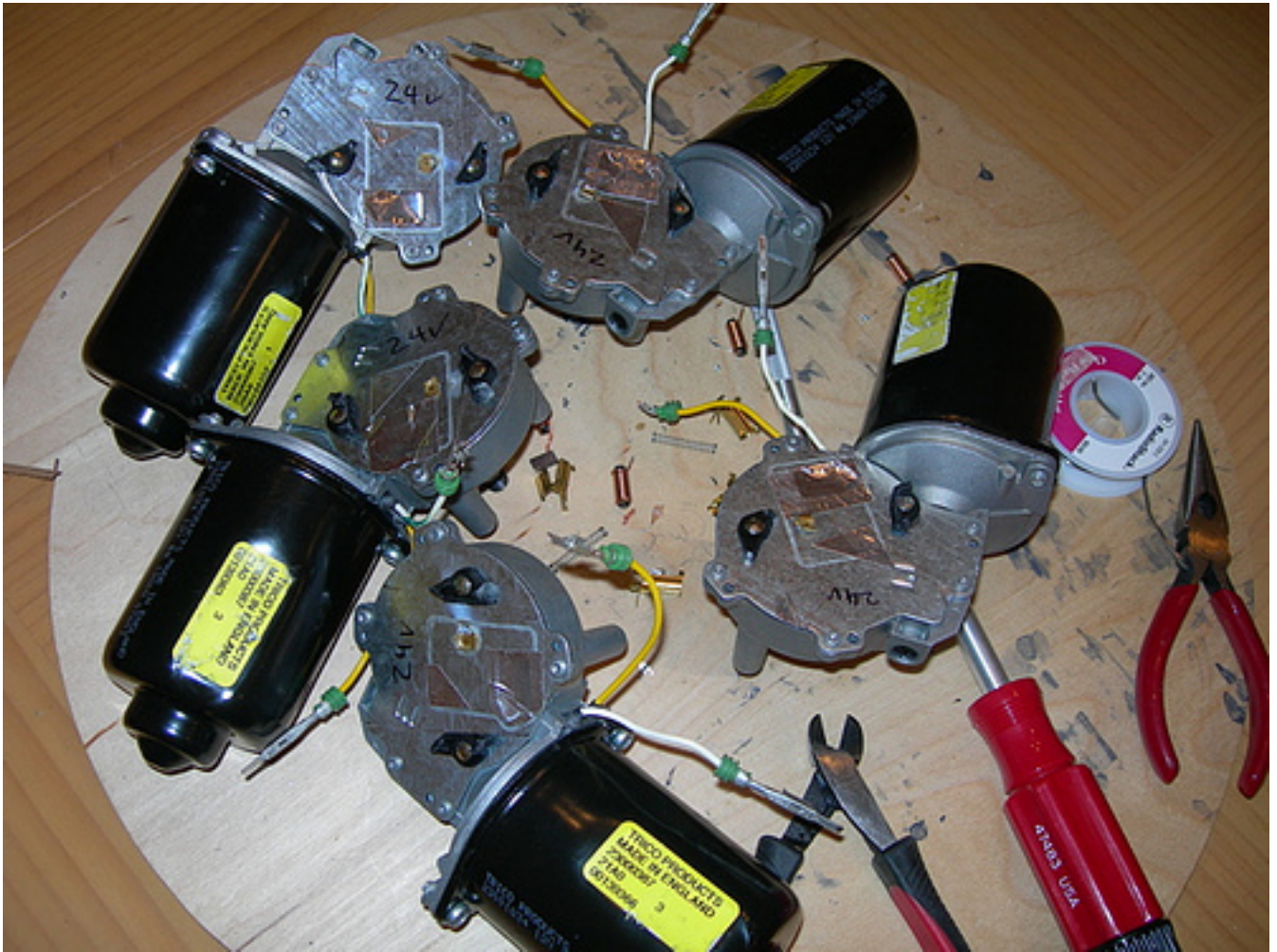


Then, it's a matter of removing one coil, snipping one end of another coil and swiveling it around to where one of the ends of the removed coil used to be. Just solder the ends together, and the conversion is done. It's almost impossible to see the soldered joint, but it's there on the lower leg of the coil. There are a few odds and ends that get pulled out and completely thrown away, hence the blank spot or two.





I managed successfully to convert five out of six motors total. I still have a few more spare motors beyond the six I worked on during these last two nights, but I think I have enough motors ready for action for the moment.



*posted by Victor Franco at 10:47 PM* 0 COMMENTS

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THURSDAY, FEBRUARY 08, 2007

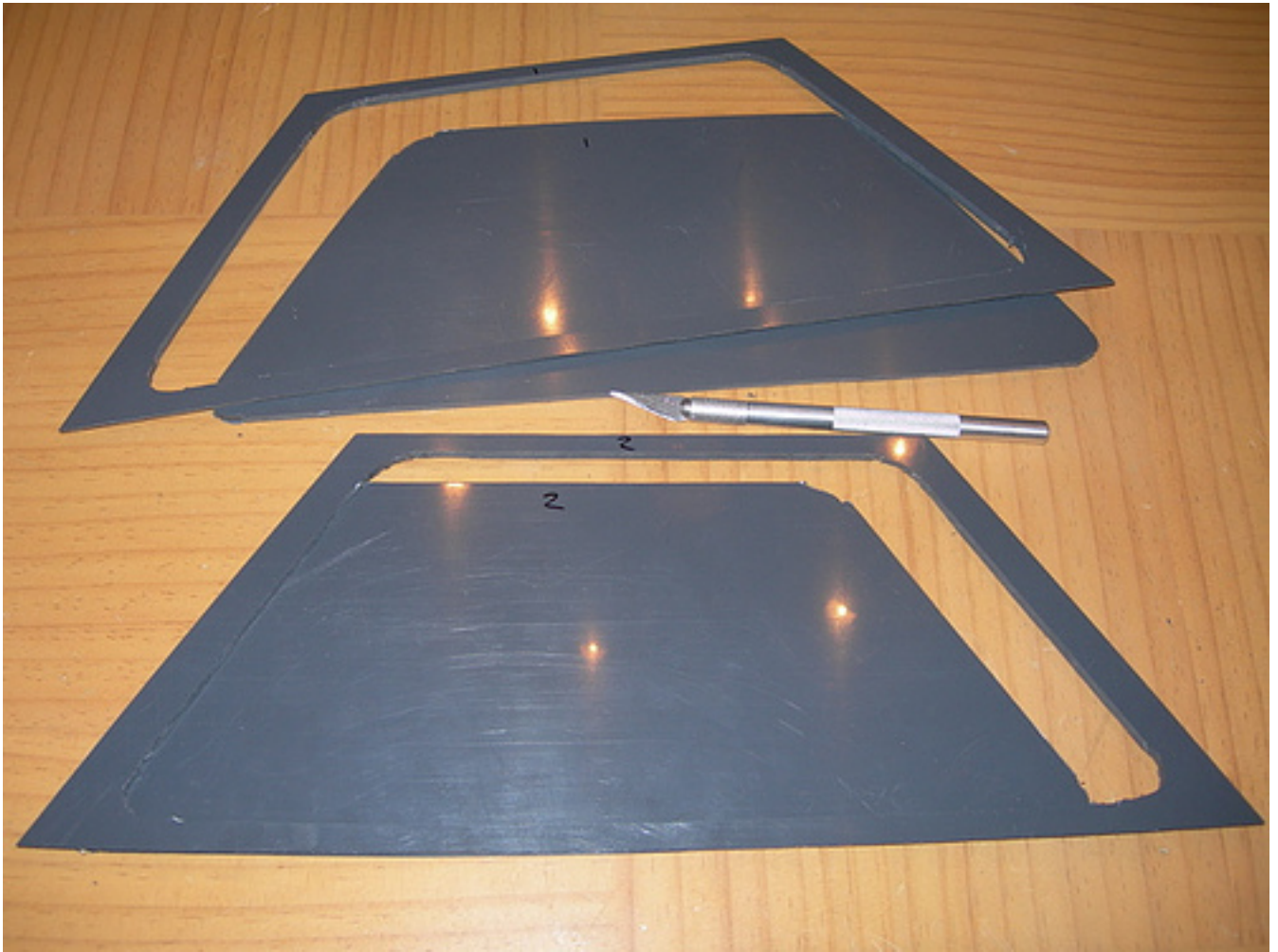
## **Cut out Outer Foot Doors, Cleaned & Prepped Aluminum**

Tonight I got around to doing some minor work for the feet.

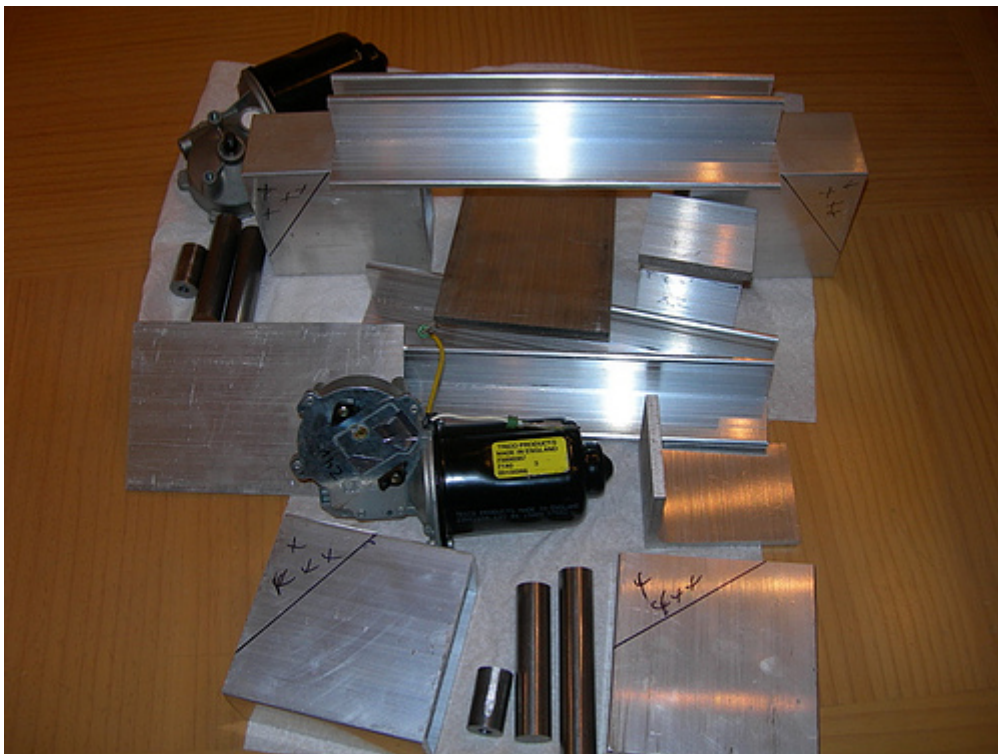
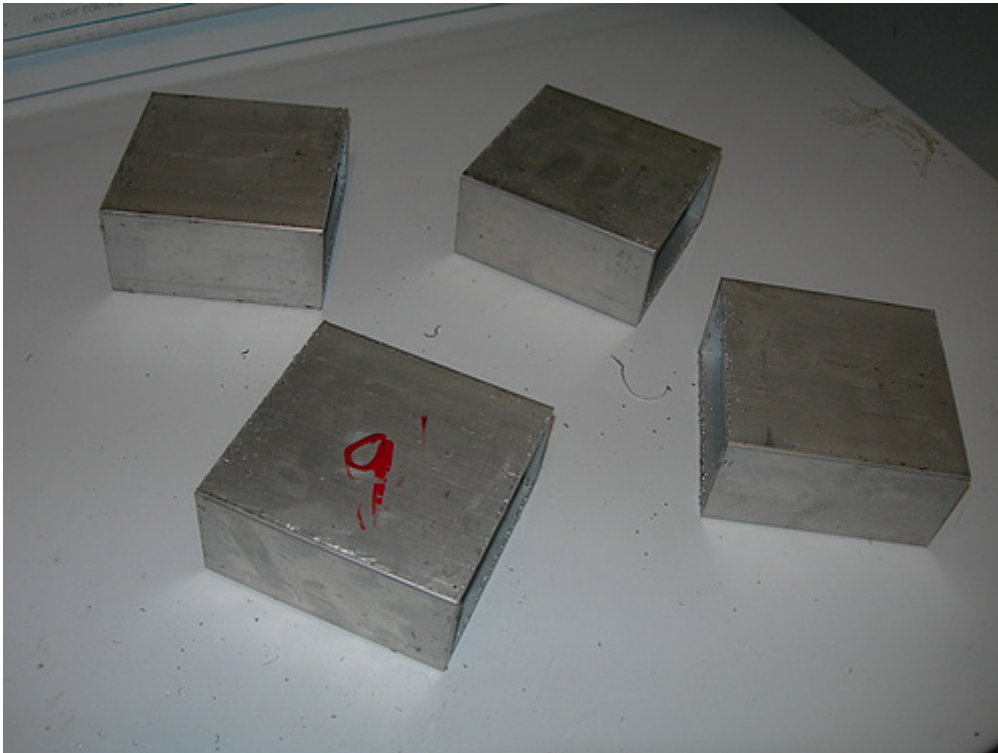
First I used an Xacto knife to cut the tabs that were holding the doors in on the outer foot shell sides.







Then, I finally got around to unwrapping the aluminum that arrived from DiscountSteel.com last week. I filed down and cleaned the various aluminum parts, in preparation for cutting on Saturday.



posted by Victor Franco at 11:03 PM 0 COMMENTS

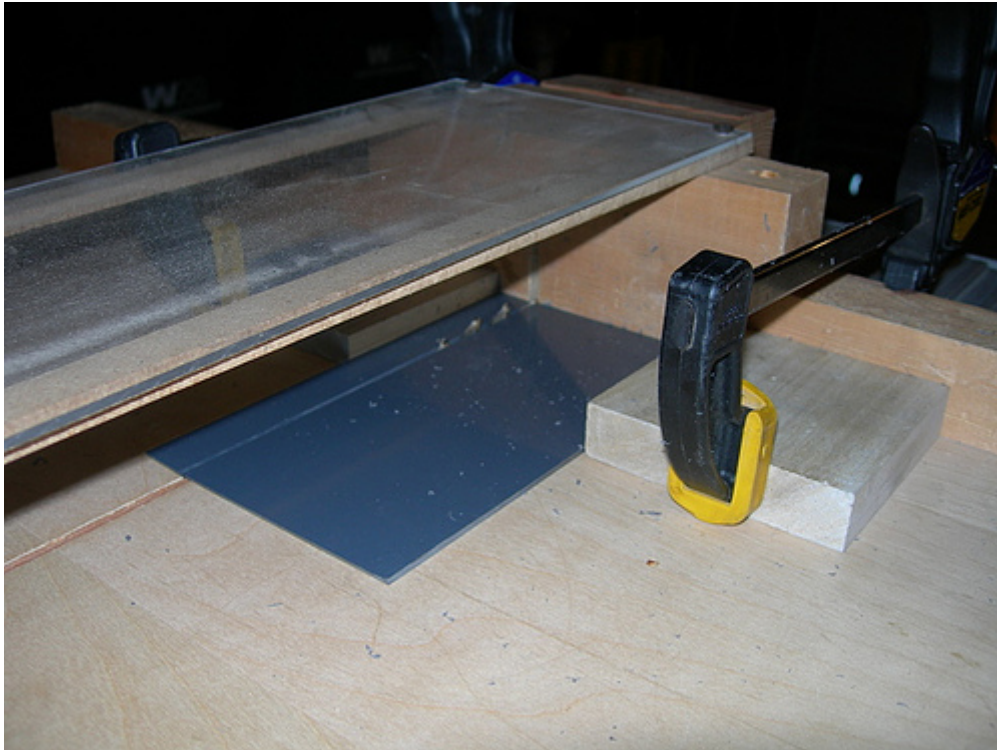
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FRIDAY, FEBRUARY 09, 2007

## Trimmed Top Pieces for Outer Feet

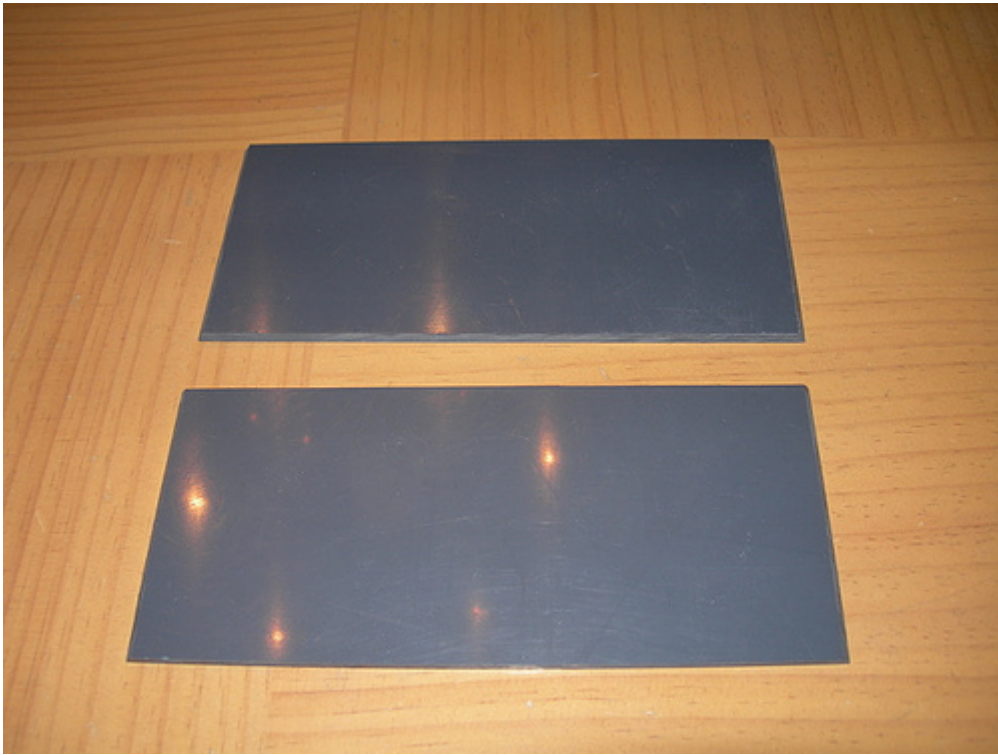
Tonight I trimmed the top pieces for the outer foot shells to be just about 3.5" wide. I cut them slightly less wide because there will be an overlap with each of the side pieces, that will bring the total width at the top to 3.5".

This was a pretty simple cut. Just anchor the PVC piece in the table saw sled and feed the material. For once there weren't any crazy miter angles; just a straight, 90 degree cut.



With these two top pieces trimmed to size, I can start gluing up three of the sides to them this weekend.





*posted by Victor Franco at 11:12 PM* 0 COMMENTS

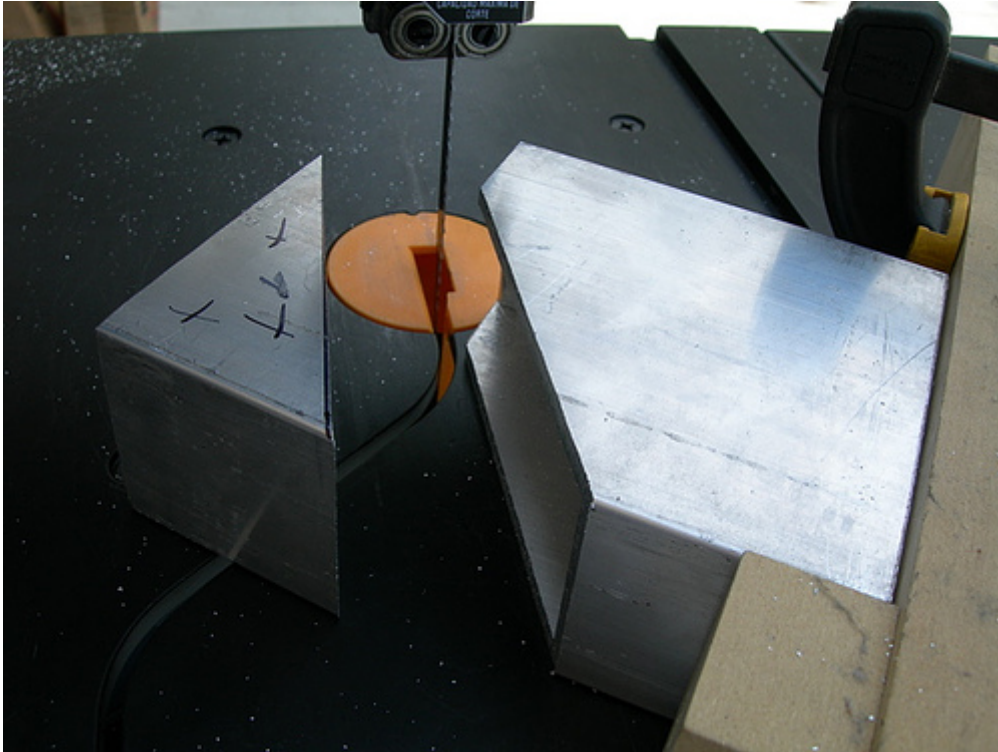
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SATURDAY, FEBRUARY 10, 2007

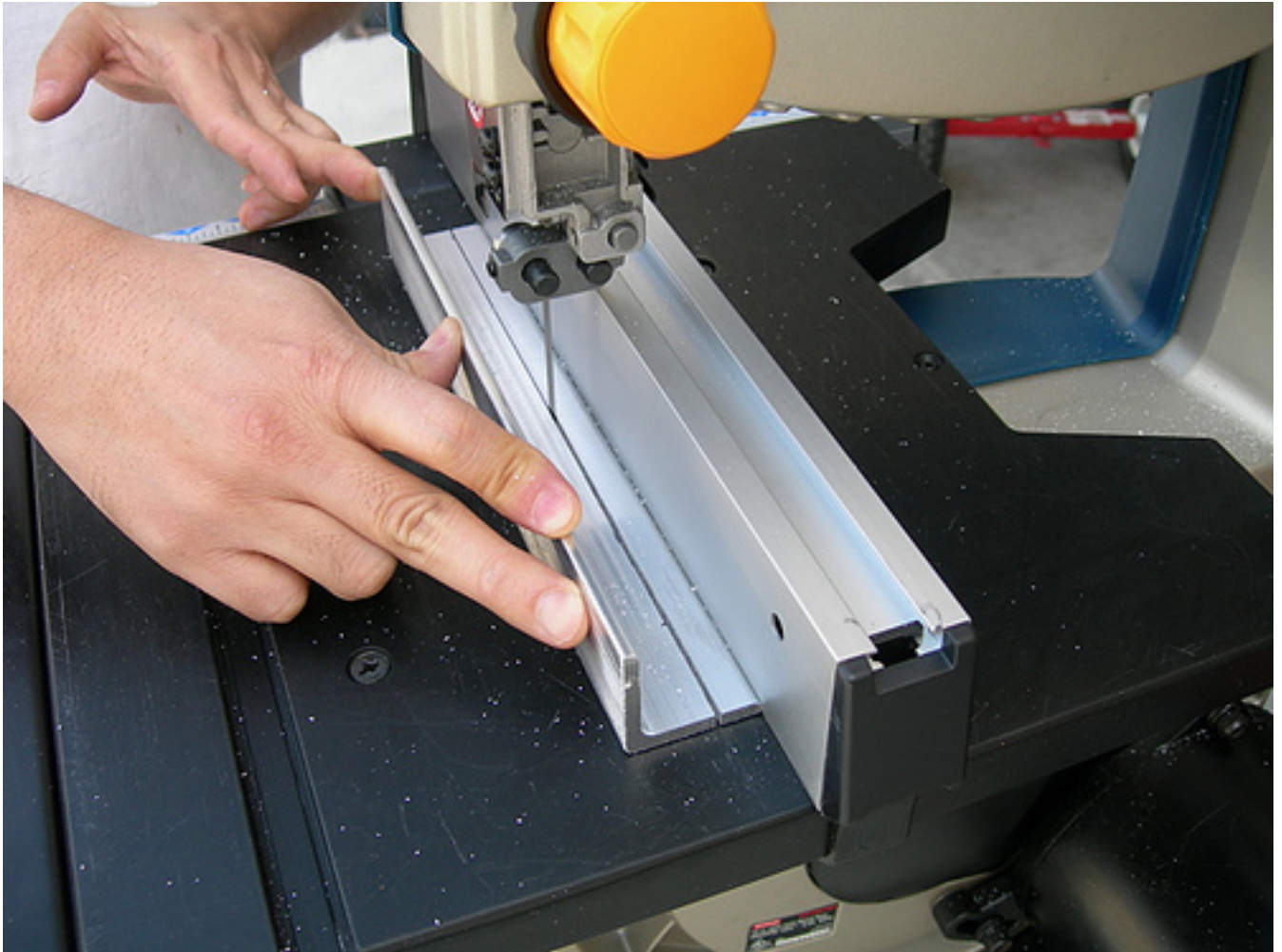
## **More Drivetrain Cuts, Started Gluing Outer Foot Shells**

Today was fairly productive, I had a chance to work on a couple of areas on the feet.

The first order of business was to drop by Kelvin's, and use his band saw yet again. I needed to chop the corners off the square pieces that will house the wheels.

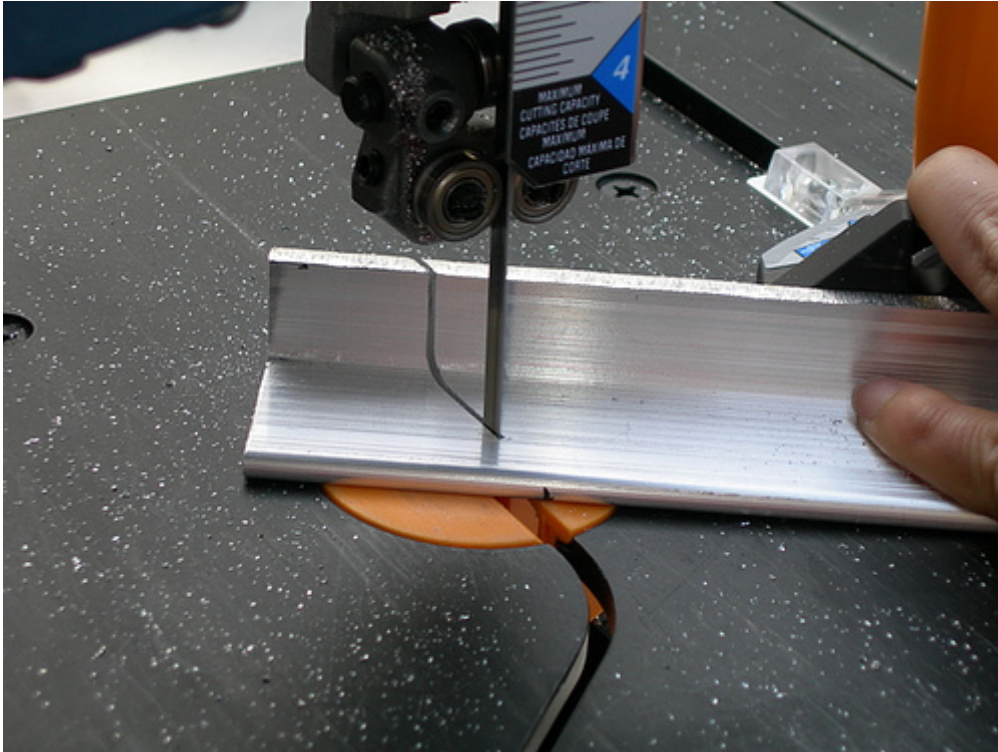


The L channel also needed to be trimmed. One pair is 1.500"x1.000", the other is 1.500"x1.188", per the H&A blueprints.

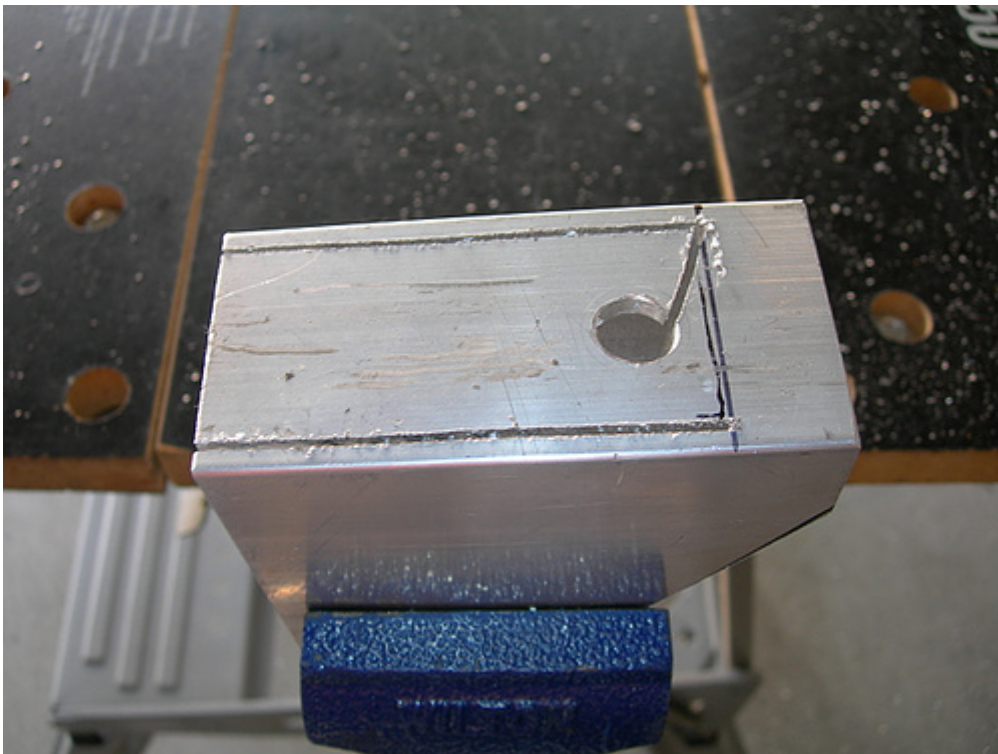


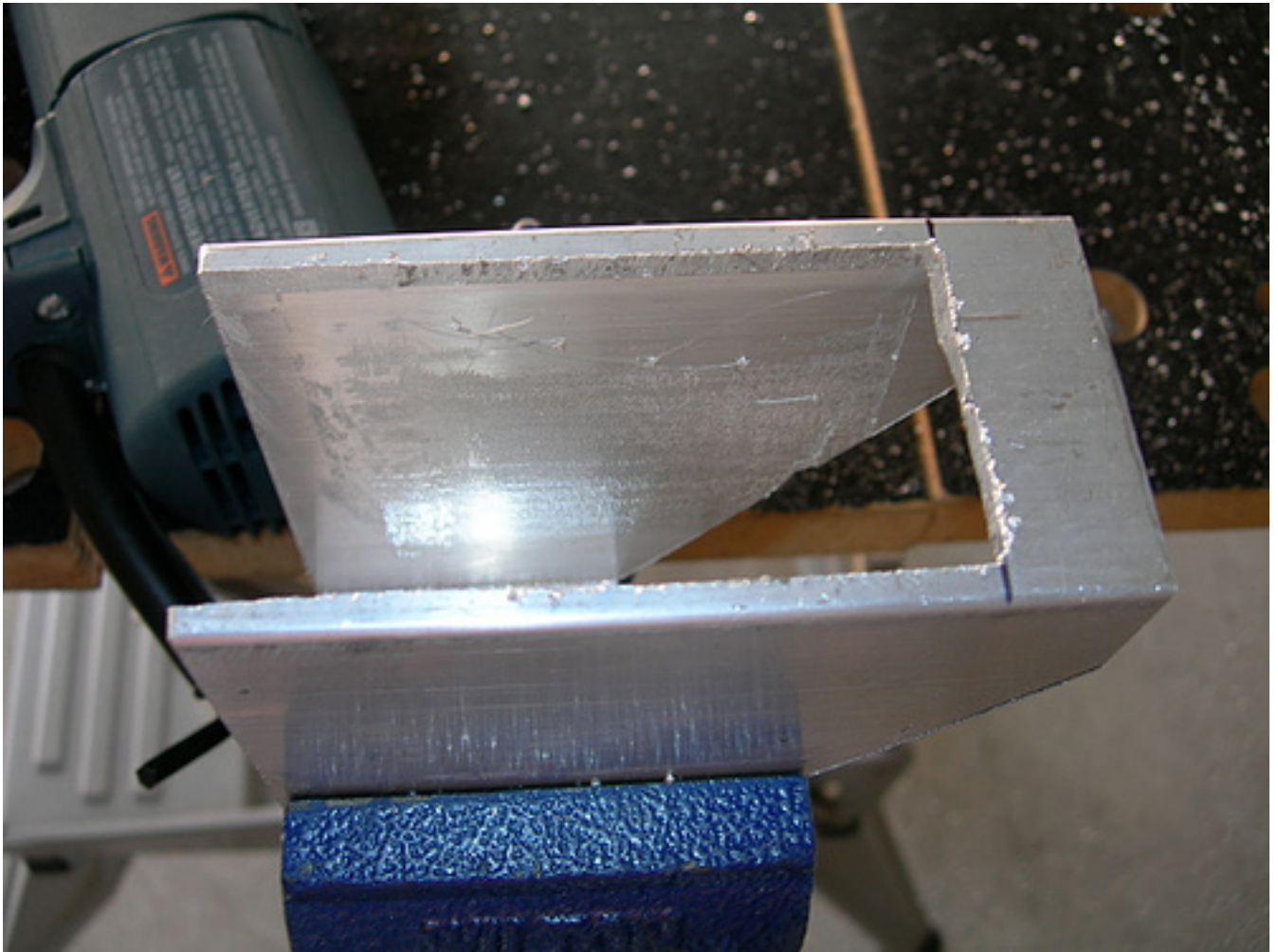
A 55 degree angle is cut on the L channel as well.





Back at home, I used a jigsaw to open up the area where the wheel will go.





After all those cuts, I cleaned everything up with a file.

Turning to the outer foot shells, I started gluing up three of the sides, and the top.



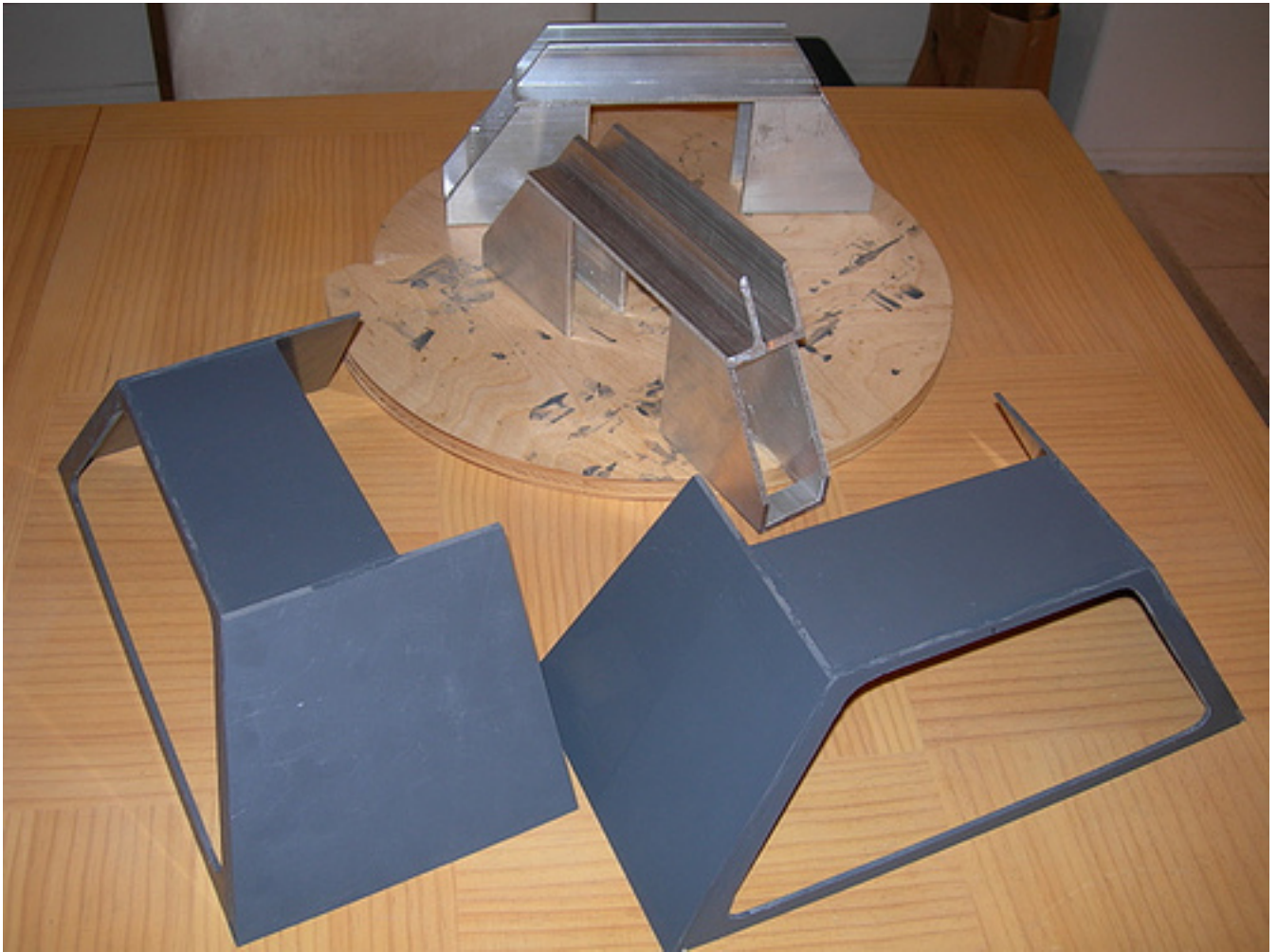






The overhang on the front and back sides will be trimmed, probably the next time I visit with Mike.

All in all, a reasonably productive day. I still need to drill a lot of holes for screws on the drivetrain, but first I need to order and receive the screws, nuts, chain, etc. from McMaster-Carr.



*posted by Victor Franco at 10:01 PM* 2 COMMENTS

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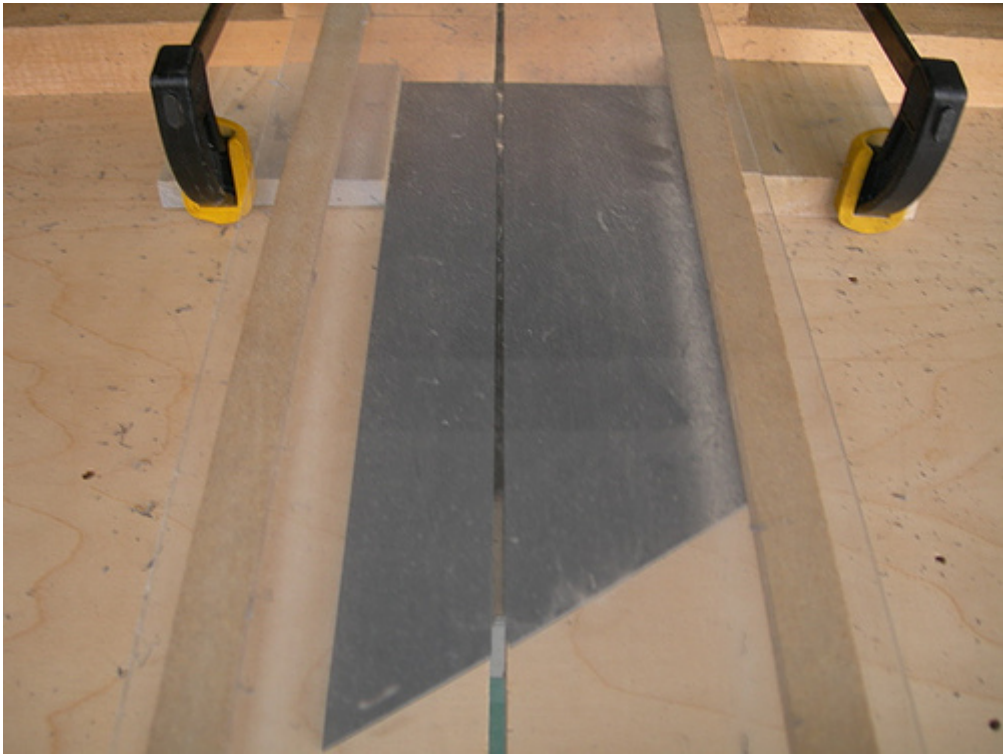
SUNDAY, FEBRUARY 11, 2007

## Cut Side Details & Strips for Outer Feet

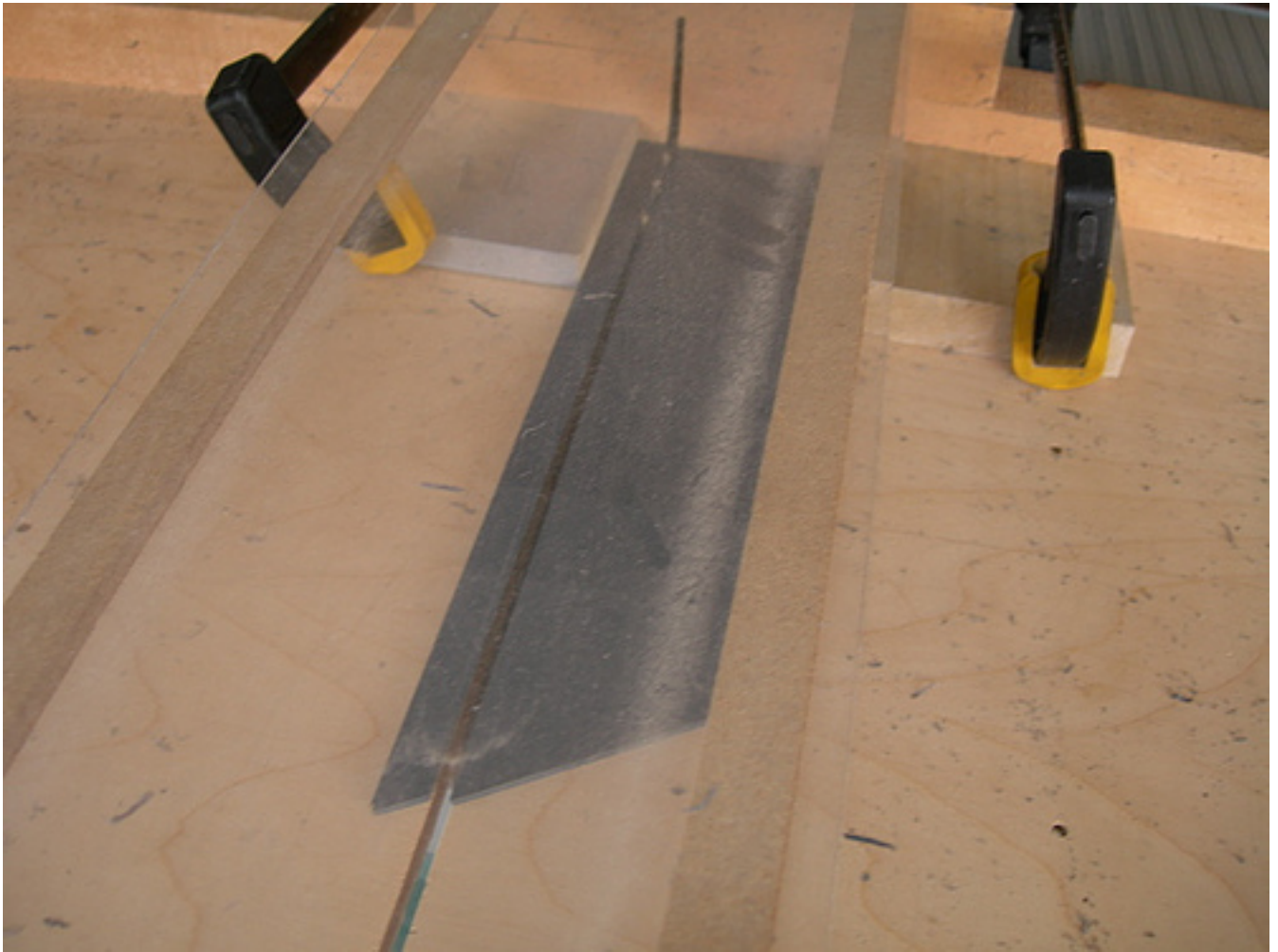
Before I forget to mention it, blogger.com allows users to search its blogs. You can look up something like "wedges" and find any page that might be dealing with the ankle wedges. Now, back to our regularly scheduled blog entry.

For the first time in a while, I was able to work on a very easy part of the build, the details and strips that adorn the doors of the outer feet. Like the rest of the foot shells, these are made from 1/8" thick PVC.

I cut some PVC scrap that I had sitting around for these parts. First I cut a strip for the width of the side detail, and then another for the side strip.







Next I cut the required angles with the a miter saw.



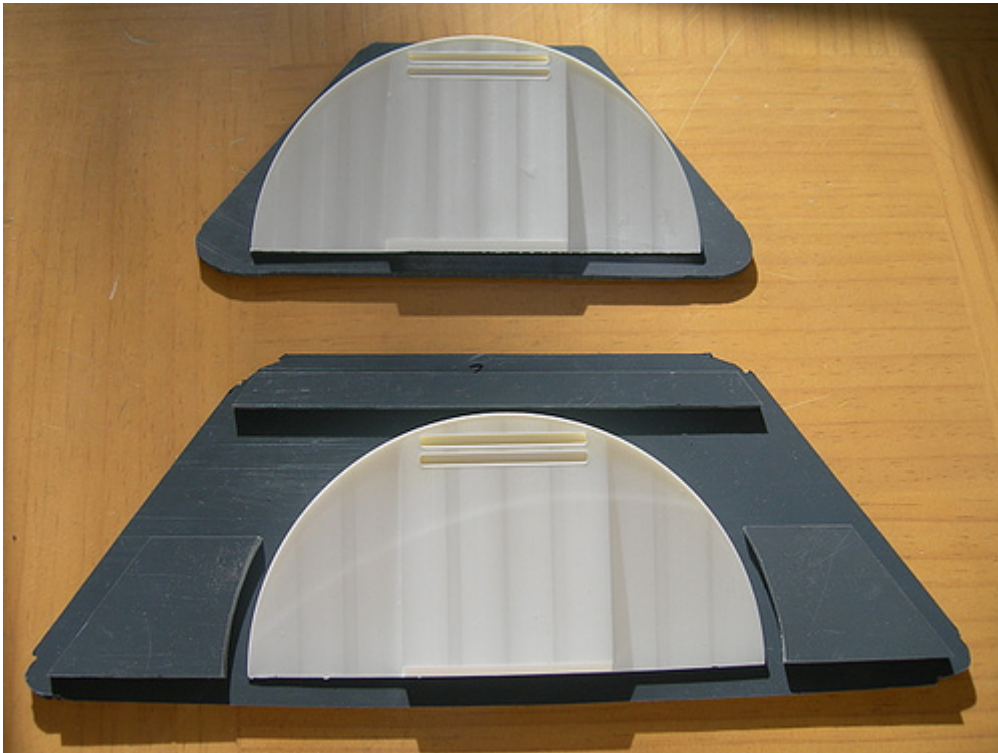


At this point, the side strips are done, but the side details have a curve that needs to be cut from one side. I started the curve with the Dremel using the cutoff wheel attachment, and I finished it with the drum sander attachment.





As mentioned above, these parts go on the outer doors, along with the half-moons. I still need to trim the door edges. I should have done that today, but I forgot(!). The center door looks like a baby door when compared to the outer door.



*posted by Victor Franco at 10:32 PM* 0 COMMENTS

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TUESDAY, FEBRUARY 13, 2007

## More Drivetrain Parts Arrive, Started Sanding Doors for Outer Feet

My order from McMaster-Carr arrived today. This pretty much rounds out the remaining parts I need for the drivetrain. For some strange reason, two of the 11-tooth gears are being shipped from Chicago, while the other four were part of today's shipment. Must be an inventory issue or something.

The screws and nuts only come in bulk packages, but they are relatively inexpensive, compared to the gears and chain at least.



I started sanding down the edges of the doors that go on the outer foot shells tonight.





There's supposed to be a 1/8" gap between the door and the foot shell. I'm just about there with the first door, I probably need to sand a bit more.



This is almost as glamorous as when I [sanded the resin eye](#).

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*posted by Victor Franco at 10:53 PM* 0 COMMENTS

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WEDNESDAY, FEBRUARY 14, 2007

## Started Sanding Second Outer Foot Shell Door

My two other gears from McMaster-Carr arrived today. I still think it's weird that they shipped separately, but what do I know?

More exciting sanding of foot shell doors tonight. It looks unsurprisingly similar to last night's effort. I'm sure I'll have to do a little finish-sanding on these doors still, but it's a start.



*posted by Victor Franco at 11:02 PM* 0 COMMENTS

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FRIDAY, FEBRUARY 16, 2007



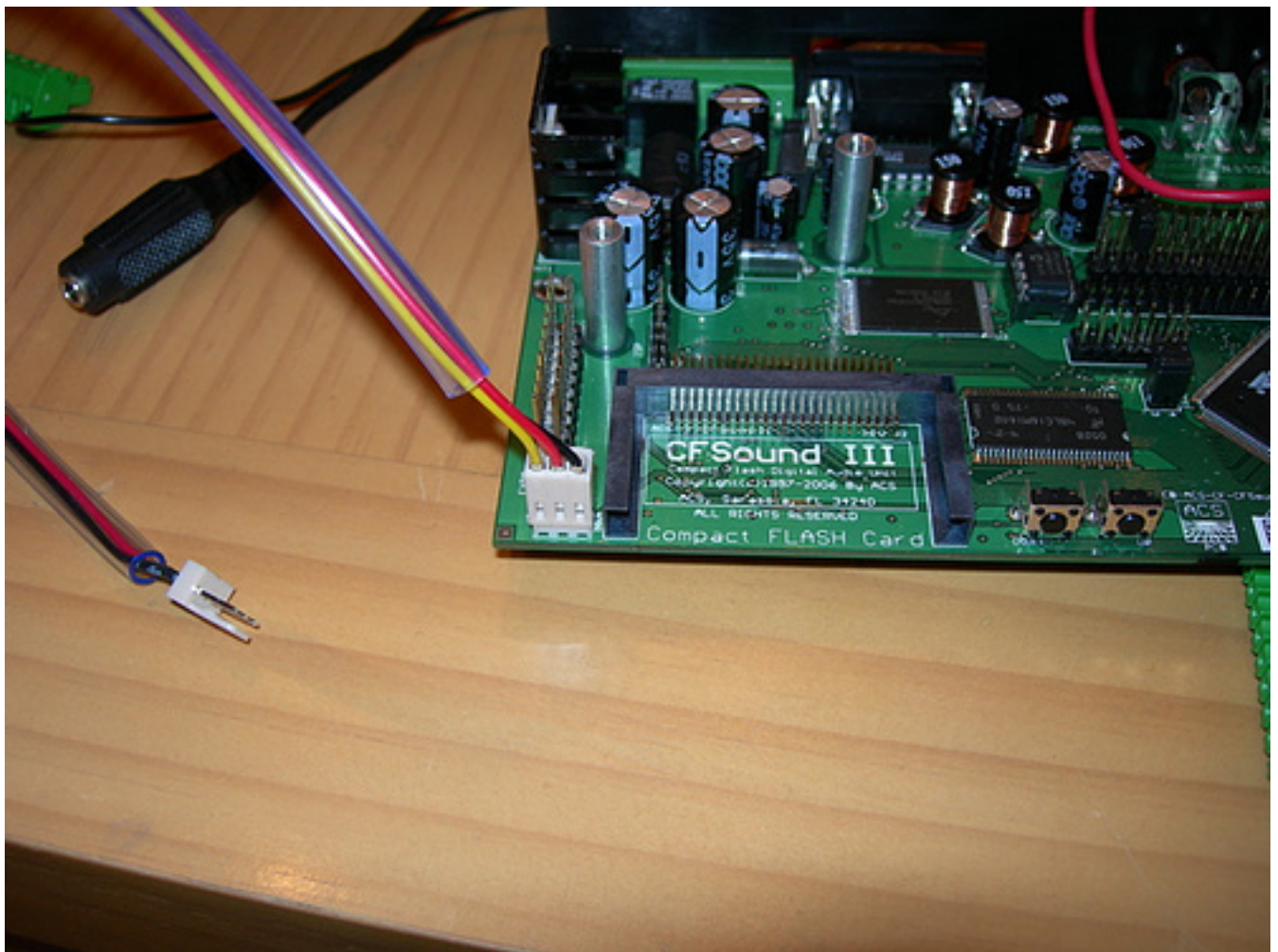
## Added Volume Control

Tonight I decided to add a volume control to my CFSound III system.

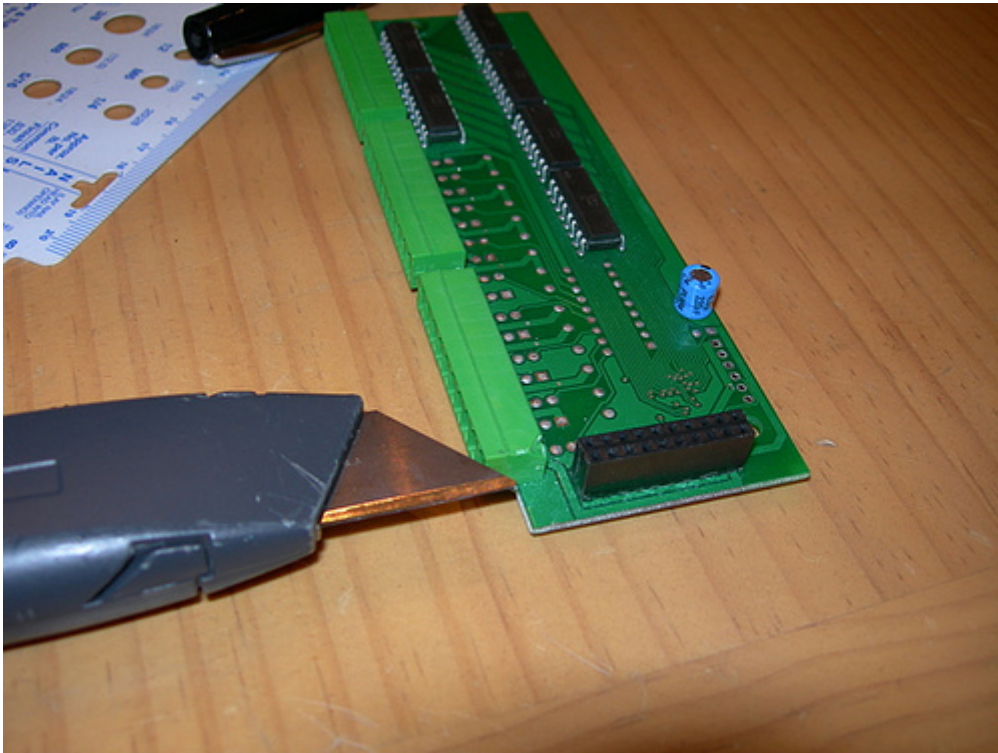
Unlike the CFSound II, the CFSound III has no volume knob. Instead, there are two physical push buttons for volume-up and volume-down. These aren't too useful when the sound system is buttoned up inside R2.

Fortunately, there is a three-pin header on the board that can also be used to control the volume. One of the outer pins is volume-up, the other is volume-down. When ground is jumpered between an outside pin and the middle pin, the volume adjusts accordingly.

I connected a three-pin cable (like the kind used for a computer fan) to the three-pin connector on the CFSound III board. I had to trim the beige plastic on the connector down a bit, in order for the Contact Sense 24 card that sits above the connector to fit properly. I also had to trim about 1mm off one corner of a green connector on the Contact Sense 24.



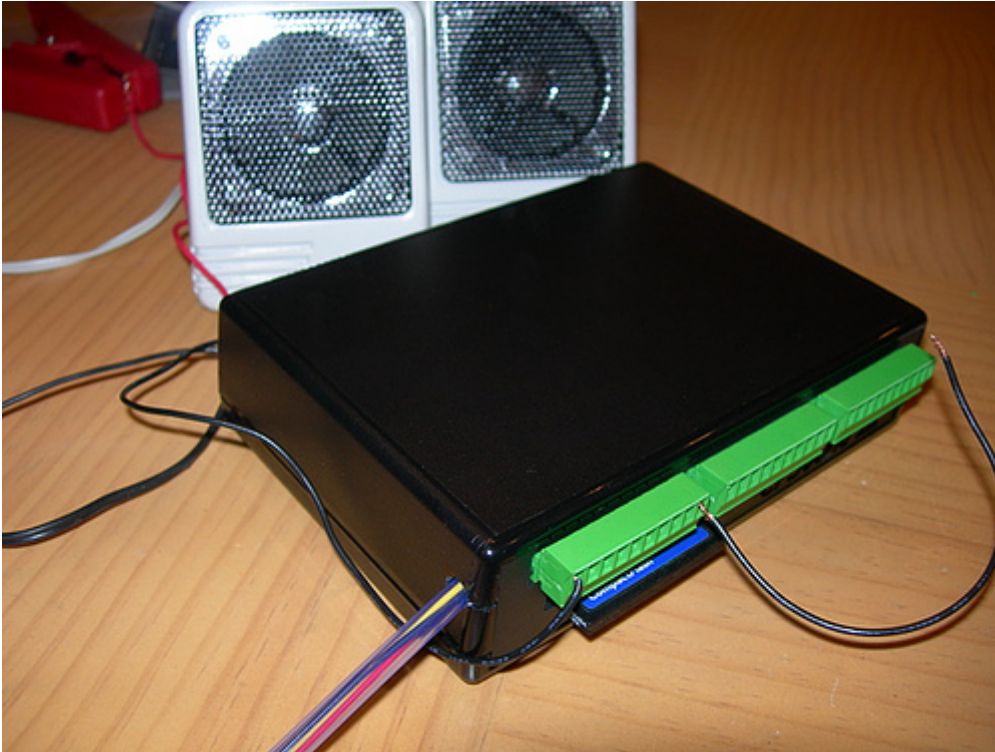




I drilled a 1/4" hole in the side of the box for the cable to fit through. After drilling the hole, I cut a small slot for the wires to slide through as well.



It works! Once I get my remote control system (which I'm *still* waiting for), I'll connect the wires so that I can control the volume via the remote.



*posted by Victor Franco at 10:25 PM* 1 COMMENTS

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SATURDAY, FEBRUARY 17, 2007

## More Foot Shell Work at Mike's

Today was a pretty exciting day, things are starting to come together for the foot shells.

Mike showed me the current state of his outer foot shells. He has trimmed the curved sides and glued them in place.



The first item of business for my foot shells was to trim the curved sides to size. This was an iterative process; trim, fit, trim, fit. Mike cut them perfectly to size.





Next up was cutting the bottom strips to size for center foot shell. These are simple 45 degree cuts with no beveled edge (yea!).





I made a practice cut, as I plan to cut the bottom strips for the outer feet during this three-day weekend.





Mike cut these perfectly too, ready for sanding and gluing.



Mike trimmed down the overhang of some of the edges on the outer foot shells with the Dremel cutoff wheel, followed by the drum sander, to wrap up the day.



I hope to glue up and trim the rest of my outer foot shells too here at home during this weekend. I can feel the momentum starting to build again, it's a good feeling.  
*posted by Victor Franco at 11:50 PM* [0 COMMENTS](#)

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SUNDAY, FEBRUARY 18, 2007

## Foot Shell Gluing, Lower Strips Prepped

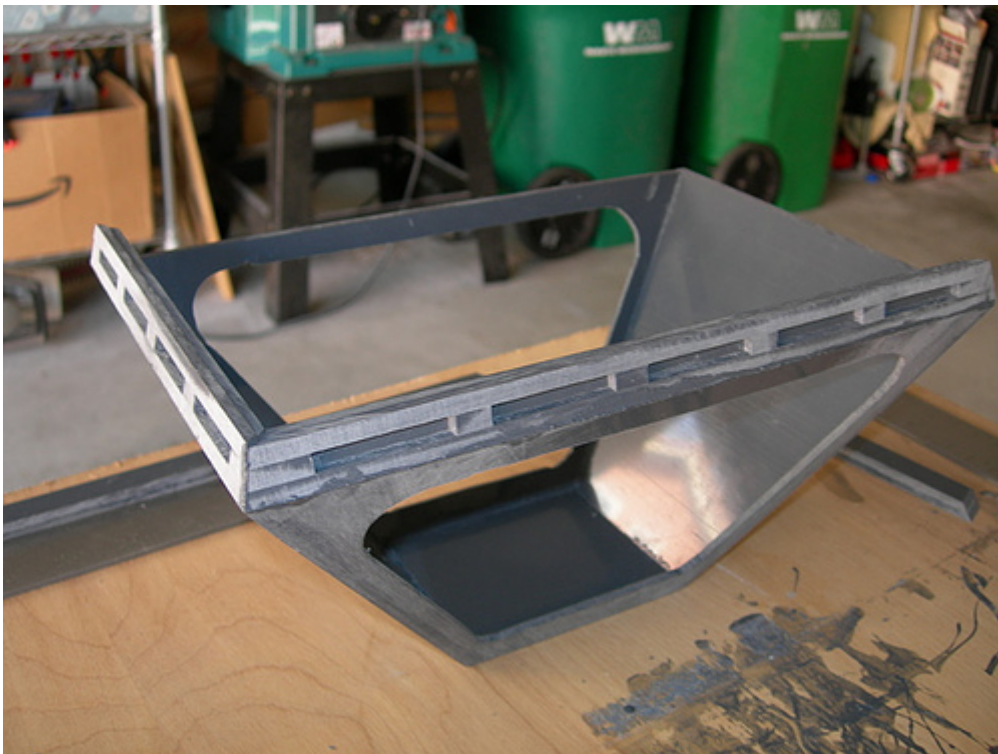
Today I glued up some of the cuts from yesterday.

First I glued in the curved sides of the outer foot shells. These were actually glued in right-side up, but after the PVC glue had dried, I turned the foot shells over and oozed some more PVC glue on the seams from the inside, for further reinforcement.





Next, I glued down the bottom strips on the center foot.

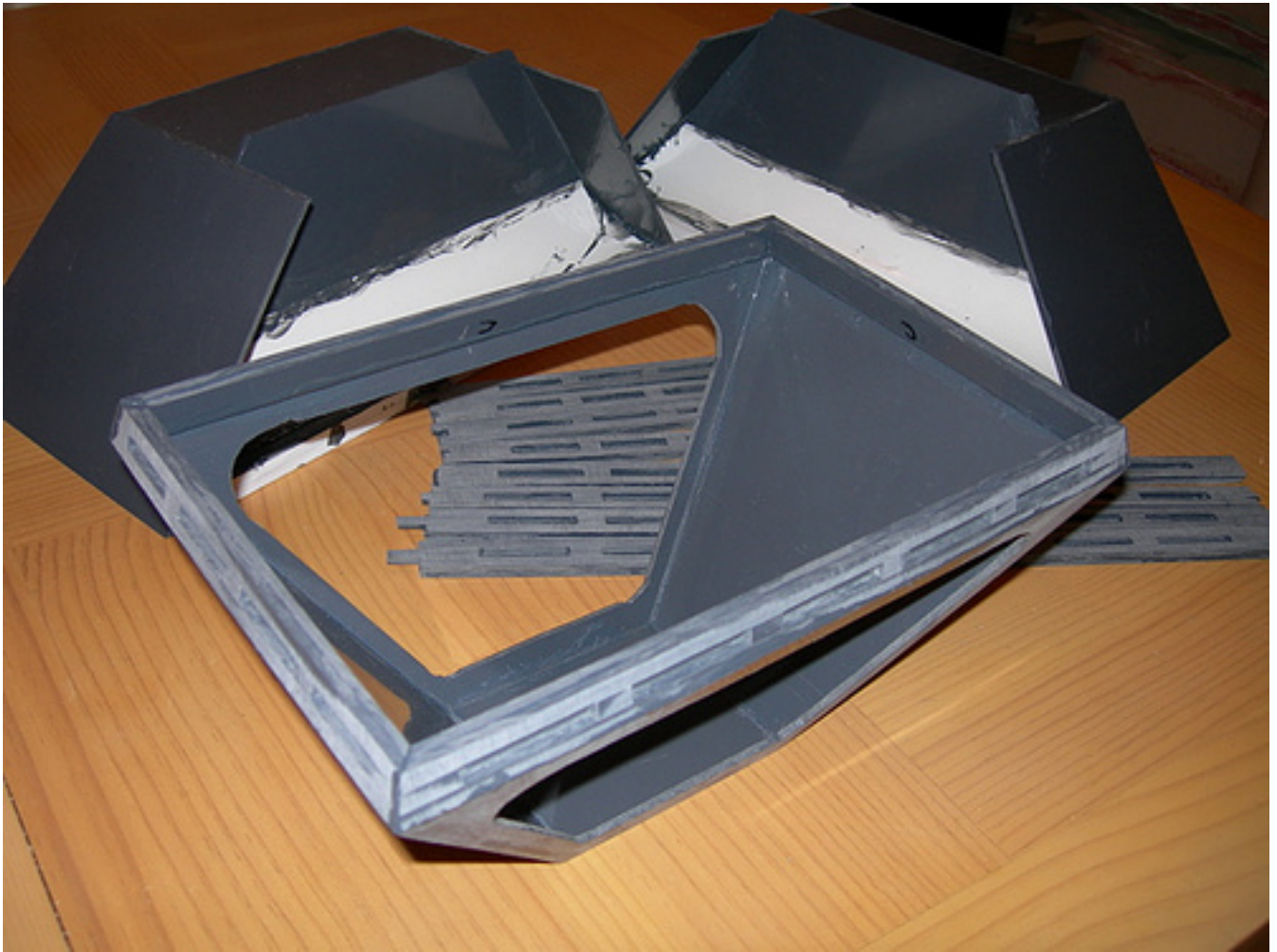


Last up was sanding smooth the outer faces of the bottom strips for the outer feet. I also cleaned up the little "windows" in the strips as much as I could. This

actually took longer than all the gluing combined.



Tomorrow I plan to trim the bottom strips for the outer foot shells to size. I also plan to trim off the overhang on the outer feet. After that, I should be able to glue the bottom strips onto them. Then those outer foot shells will really start to look real!



*posted by Victor Franco at 11:48 PM* 0 COMMENTS

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MONDAY, FEBRUARY 19, 2007

## **Dremeled & Sanded Outer Foot Shells, Started Trimming Bottom Strips**

I love three-day weekends! (Who doesn't??) Today afforded me a chance to make a mess in the garage.

I pretty much picked up where I left off yesterday with the outer feet. The PVC glue had dried overnight, so I used the Dremel with the cutoff wheel to hack down most of the overhang on the edges of the outer feet. Then I used the Dremel drum sander to bring the overhang to a minimal distance so that I can sand off the rest by hand.





After the trimming, I sanded the top side of one of the outer foot shells nice and flat. I also sanded the flat edges on the bottom of the curved side on both foot shells, so that I could be sure that the lengths of the bottom strips could be measured accurately.



Recall that the bottom strips were cut too long intentionally, and now is the time to cut them to the correct length.

As Mike showed me on Saturday, the idea is to locate the midpoint of a bottom strip, and the midpoint of the corresponding edge of the foot shell. These two points will line up when the strip is glued to the foot. Once the centers are lined up, I then used a razor blade to lightly mark only the left edge on the bottom strip to trim. (The strips were trimmed upside-down, so the cut itself appears on the right.)

The top and bottom edges of the bottom strips have a 12 degree beveled edge, so I used a strip of wood that Mike cut on Saturday that also had the 12 degree tilt, to rest the PVC strip on. This helps to prevent the PVC from chipping as the cut is being made. I trimmed the strip down at a 45 degree angle a little at a time, until I hit my mark.





With the left sides trimmed, later I can again match the bottom strip to the corresponding foot shell edge, and make another notch for the right end, and trim. This time, I should have a match at both the left and center points on both the bottom strips and the foot shell edges, but the important thing is to align the left edges before marking the right edge. This ensures the correct length. (I ran out of daylight, otherwise I would have done it today.)

There's still a fair amount of work left on these foot shells, but they are definitely taking shape.





*posted by Victor Franco at 9:18 PM* 0 COMMENTS

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TUESDAY, FEBRUARY 20, 2007

## Outer Foot Shell Sanding

Tonight I worked on sanding the edges of one of the outer foot shells smooth.

I found some PVC pipe that's almost 3" outer diameter. It's more like 3.25", so I can't use it to perfectly sand smooth the curve of the feet, but I can get close.



I need to keep in mind that I'm going to be cutting a fairly large chunk of material out of the foot shell, because the drivetrain isn't going to fit completely inside the foot shell. It will actually enter into the battery box, so those will get cut too. There's no sense in finishing certain sections of the foot shells to perfection because of this.

After a few hours of sanding, I have one of the foot shells just about ready for filling (with Bondo, probably) and then... another round of sanding. There's a lot of sanding in my future.



This is going to get tedious over the next few days, but R2 refuses to build himself.

*posted by Victor Franco at 10:15 PM* 0 COMMENTS

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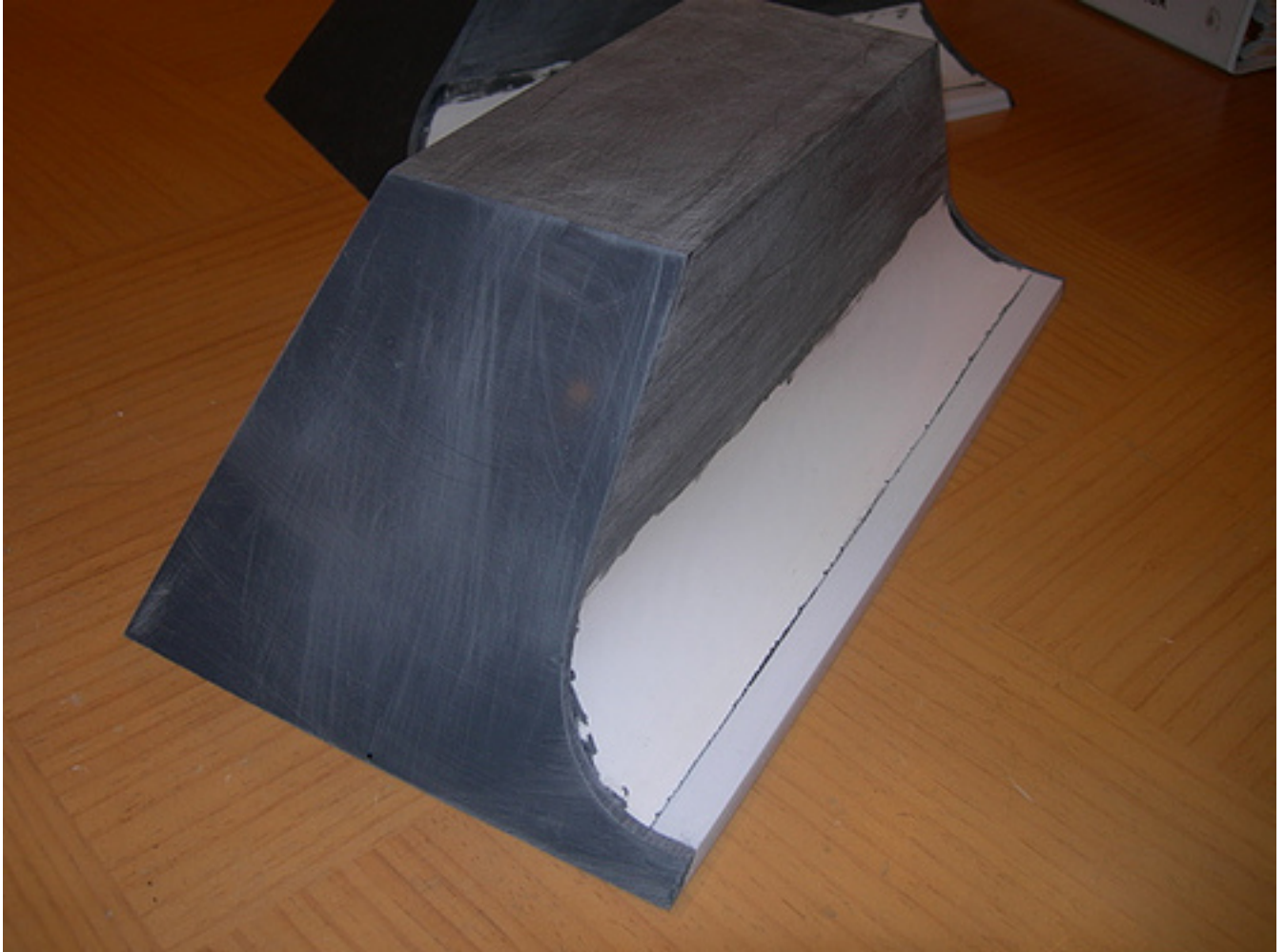
WEDNESDAY, FEBRUARY 21, 2007

## Sanded Second Outer Foot Shell

More of the same from yesterday. A few hours of sanding the other outer foot shell.

This time I used one of Craig's battery boxes to sand the curved area. The profile is a better match than the pipe I used yesterday, but it's harder to use. I actually moved the foot back and forth against the sandpaper on the stationary battery box.





I probably have a little bit more light sanding to do, but it's almost ready for filling here and there.

*posted by Victor Franco at 10:28 PM* 0 COMMENTS

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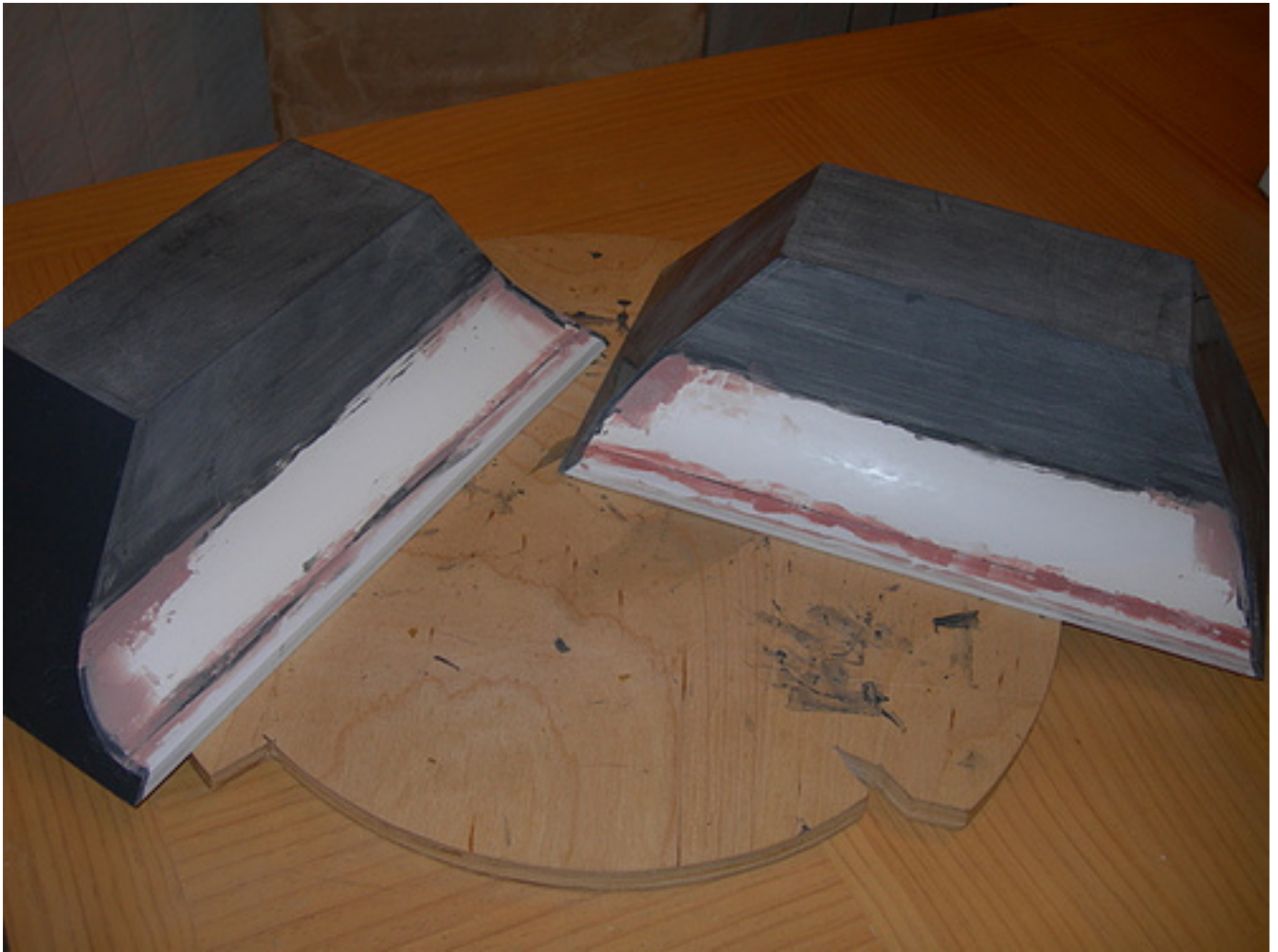
THURSDAY, FEBRUARY 22, 2007

## Fun with Bondo

Tonight I got reacquainted with my good friend Bondo. Bondo and I first met on [July 16th of last year](#), and we've been buddies ever since. Evidently it's the fumes.



The main areas that needed work were where the curve meets the front/back sides, and where the curve meets the flat part above the curve. A couple of seams also got some attention. Tomorrow I'll sand, hit it with some primer to find the discontinuities, and repeat as necessary.



*posted by Victor Franco at 10:50 PM* 0 COMMENTS

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SATURDAY, FEBRUARY 24, 2007

## More Outer Foot Shell Finishing

After spending around five hours in the R2 Builders chat last night, I got back to work on the outer foot shells.

I sanded down the Bondo that I applied Thursday night, again by using sand paper wrapped around the battery box, and running the curved part of the foot shell back and forth.





With so many different colors to look at (gray and white for the PVC, pink for the Bondo), I used some gray primer to help find the remaining flaws.



Things actually look better than I thought they would, but I still have a little more filling and sanding to do. I'm ignoring the middle area where the curve and flat part above the curve meet, since that is going to get cut out for the drive train to fit into the battery boxes.

*posted by Victor Franco at 9:31 PM* 0 COMMENTS

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SUNDAY, FEBRUARY 25, 2007

## Finished Cutting Bottom Strips for Outer Feet, More Finishing Work

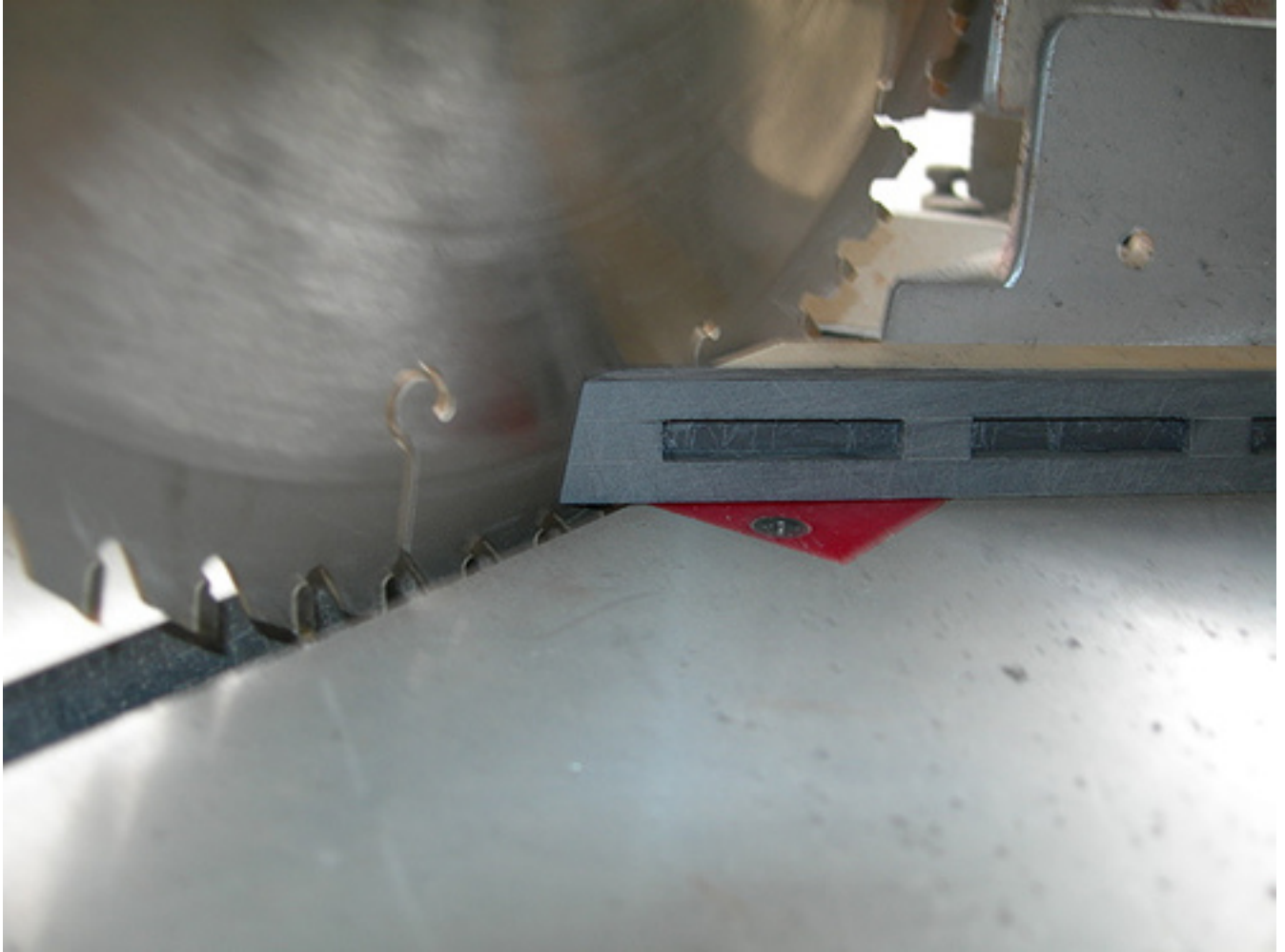
Today I completed cutting the strips that go on the bottoms of the outer feet.

I started by making a mark with a razor blade on the strip.



As I did this past Monday, I trimmed the strip down on the miter saw at a 45 degree angle.





Things are looking pretty good. I won't glue these on just yet though...



... because I'm still working on finishing up the rest of the foot shells first. I did some light filling and sanding again today, more primer, and hopefully one more round and I'll be done.



*posted by Victor Franco at 10:25 PM* 0 COMMENTS

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MONDAY, FEBRUARY 26, 2007

## More of the Same

Just a few minutes of light sanding on the outer foot shells tonight.

I told you this would get tedious.

*posted by Victor Franco at 10:43 PM* 0 COMMENTS

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WEDNESDAY, FEBRUARY 28, 2007

## Aluminum Under Shoulder Details, Meet at Mike's

Ryan's excellent aluminum under shoulder details arrived today. Right now I have Keith's resin parts installed, and they do look very good, but I've wanted this part in aluminum for quite some time. I'm not exactly sure when I will install them however, as I'm driven to get the feet done before I start revisiting other areas on the droid.





Roy Powers, Mike Granek and I had a very impromptu meeting at Mike's tonight. I also had Mike review my current foot shell progress. With just a bit more work, they will get the Senna Seal of Approval™. They should, Mike did most of the work.



Yes, this my way of saying that I got nothing productive done today on my droid.  
*posted by Victor Franco at 10:25 PM* 0 COMMENTS

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THURSDAY, MARCH 01, 2007

## Remote Arrived!

Sixty-four days after I [ordered my remote control](#), it *finally* arrived. This was the last (and by far most expensive) piece of the puzzle.

Included were the Futaba T9CAP transmitter with the Vantec Keycoder 16 module installed, the radio receiver, the Keycoder 16 receiver/demultiplexer, the RDFR23 speed controller, and four digital servos (along with some other goodies like the wall charger, neck strap, etc.).



The transmitter battery was fully charged, but the receiver battery had just enough charge to test a couple of the servos for about five seconds before the juice was gone. I'll charge the receiver battery for a good 18 hours and play around a bit. I have a lot of reading to do. (Don't let the airplane graphic on the LCD mislead you, this is tuned for a 75MHz ground frequency, channel 79.)



Oh yeah, I also applied a bit more Bondo to smooth out the remaining seams and bumps on the outer foot shells. I'll sand tomorrow, and then the foot shells will be ready for the gluing of the bottom strips, and the cutting of the slots at the top.

*posted by Victor Franco at 10:29 PM* 0 COMMENTS

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SATURDAY, MARCH 03, 2007

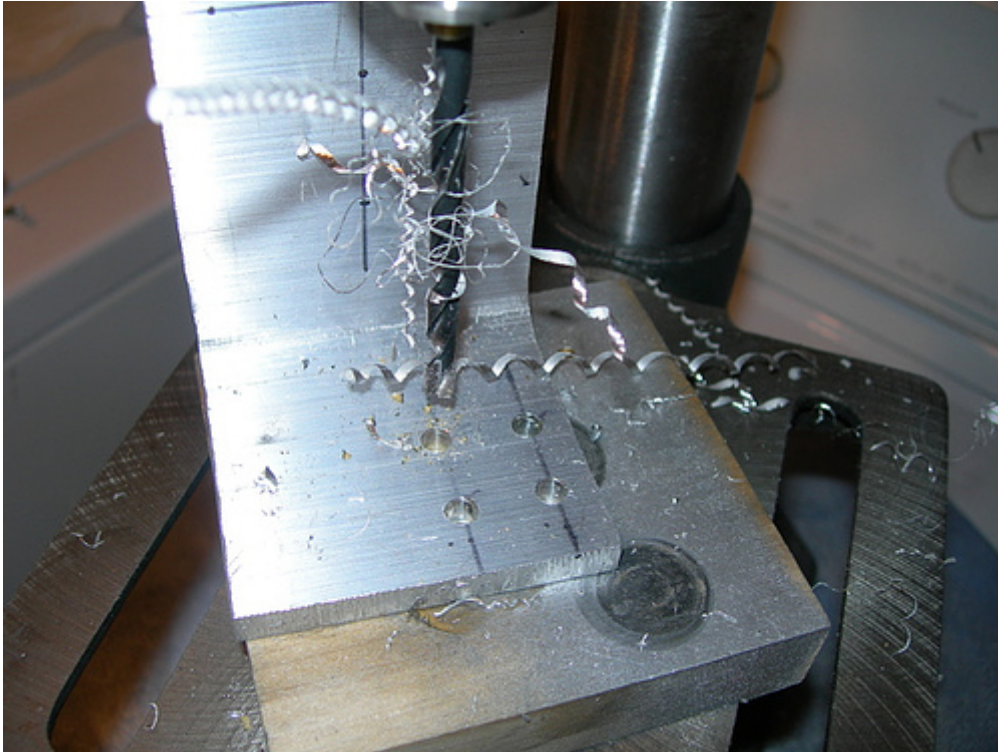
## Drilled Drive Train Motor Mounts, Marked Foot Shell Tops for Cutting, Fun with Remote

After another evening of chatting with R2 builders last night, I returned to work on my droid.

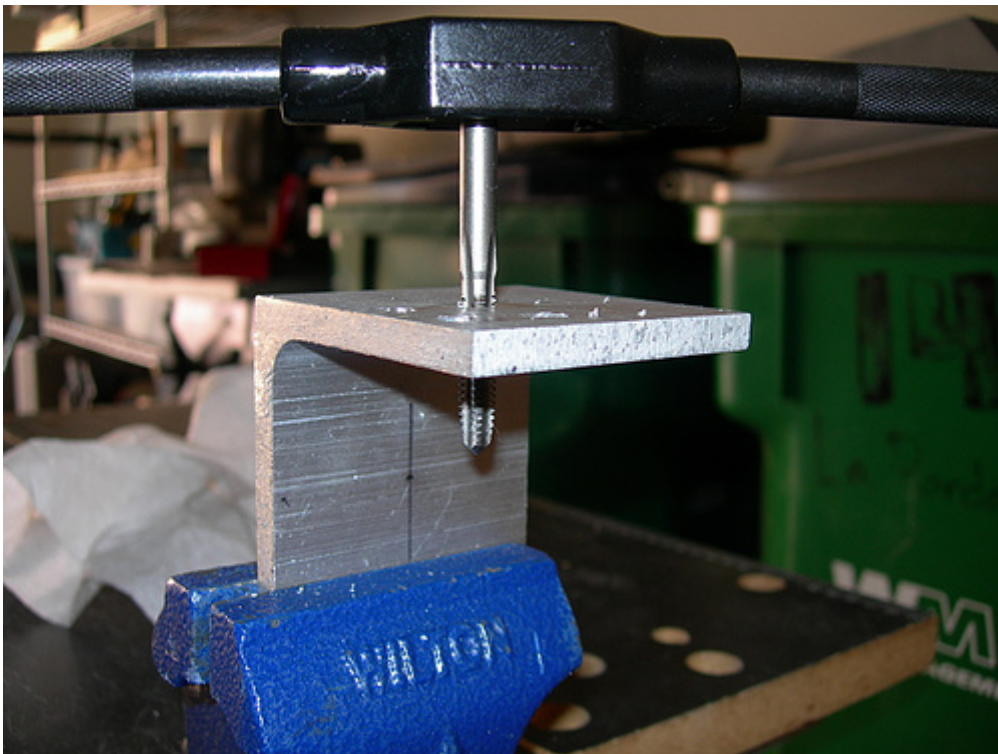
I did a last bit of sanding on the filling I've been doing on the outer feet, and I think they are good to go, at least until I glue the bottom strips on. Then another round of filling and sanding in that area. :/

Most of the day was spent drilling holes in the drivetrain motor mounts. In some cases I measured, marked, and drilled.

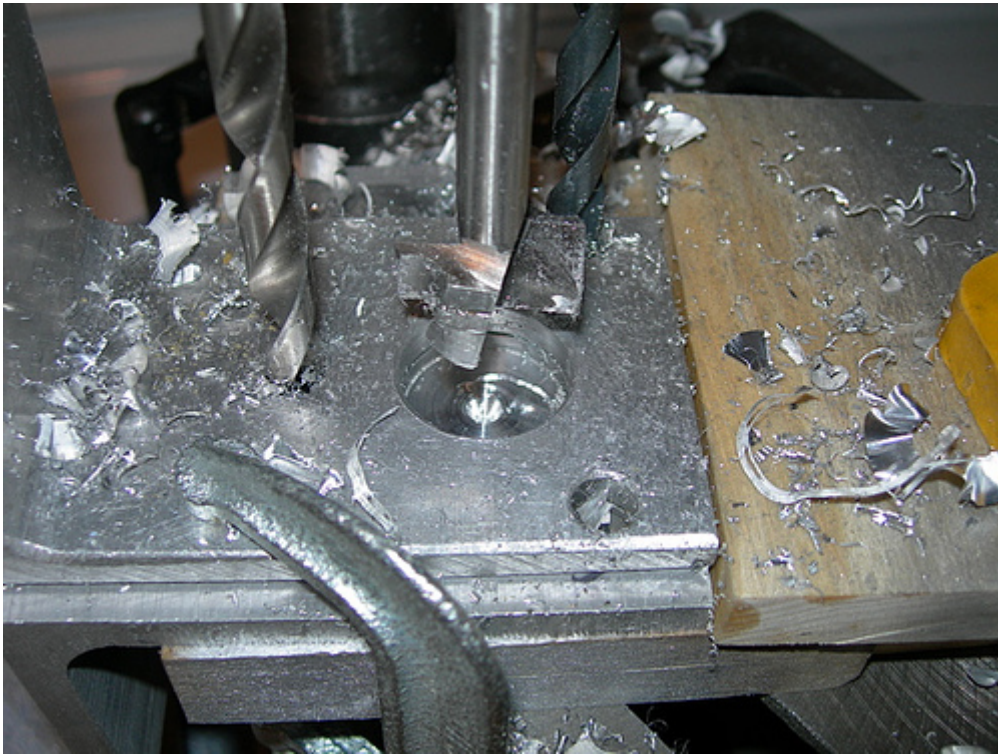




Four of the holes on each motor mount are tapped with a 4-40 tap.



In other cases, I used a spare H&A drivetrain that Mike loaned me to use as a template, which I found handy for some of the trickier hole patterns.

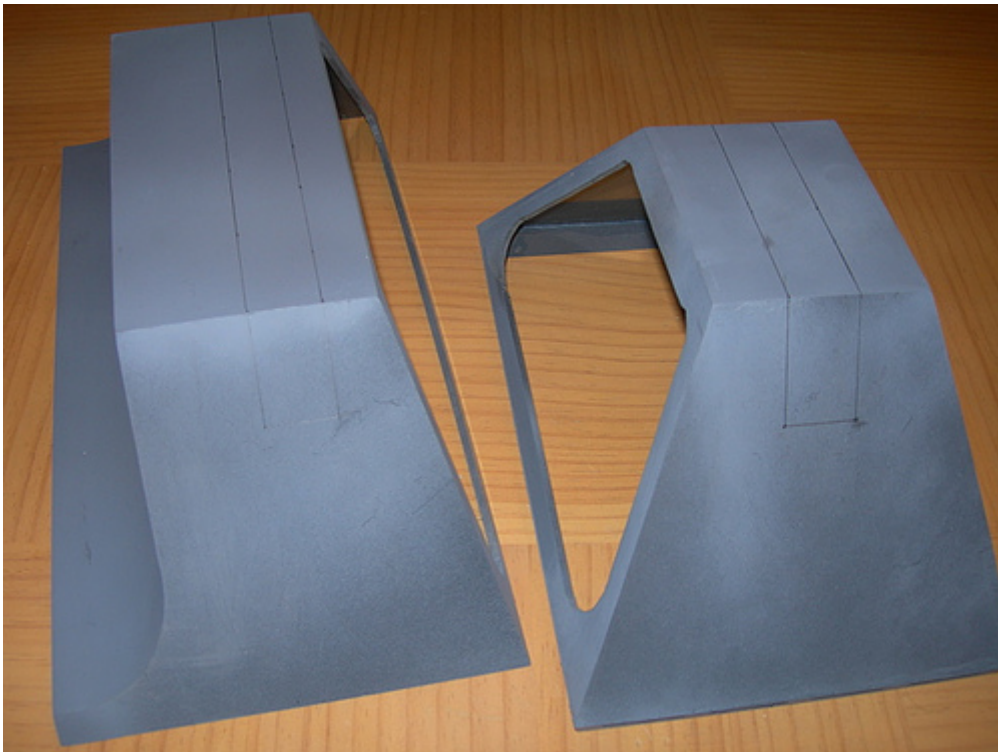


Things turned out pretty good, but I found afterward that the motors are riding a bit high on the motor mount. This will cause the motor to bump into the flat metal bar that the motor mount hangs from. I will either shim the motor mount away from the metal bar, or simply cut out the material from the metal bar that is getting in the way. I haven't decided yet.





I also marked up the foot shell tops, Mike and I plan to cut the slots out of the tops tomorrow.



And I couldn't avoid playing with the remote some more. I hooked up the



Keycoder 16 to the CFSound III, and I played R2's sounds using the remote for the first time! I had the sound system and speaker in the droid, and he was chirping happily. That was neat.

*posted by Victor Franco at 11:40 PM* 0 COMMENTS

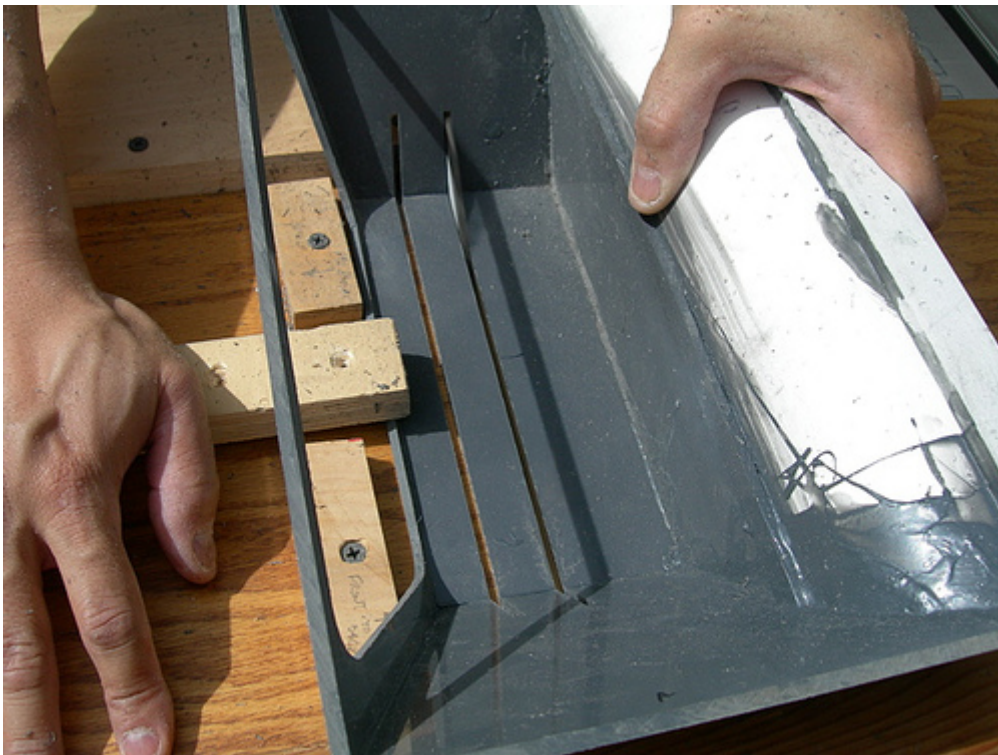
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SUNDAY, MARCH 04, 2007

## Worked on Foot Shell Top Slots, Reinforcements & Door Frames with Mike

Mike and I continued working on the foot shells today.

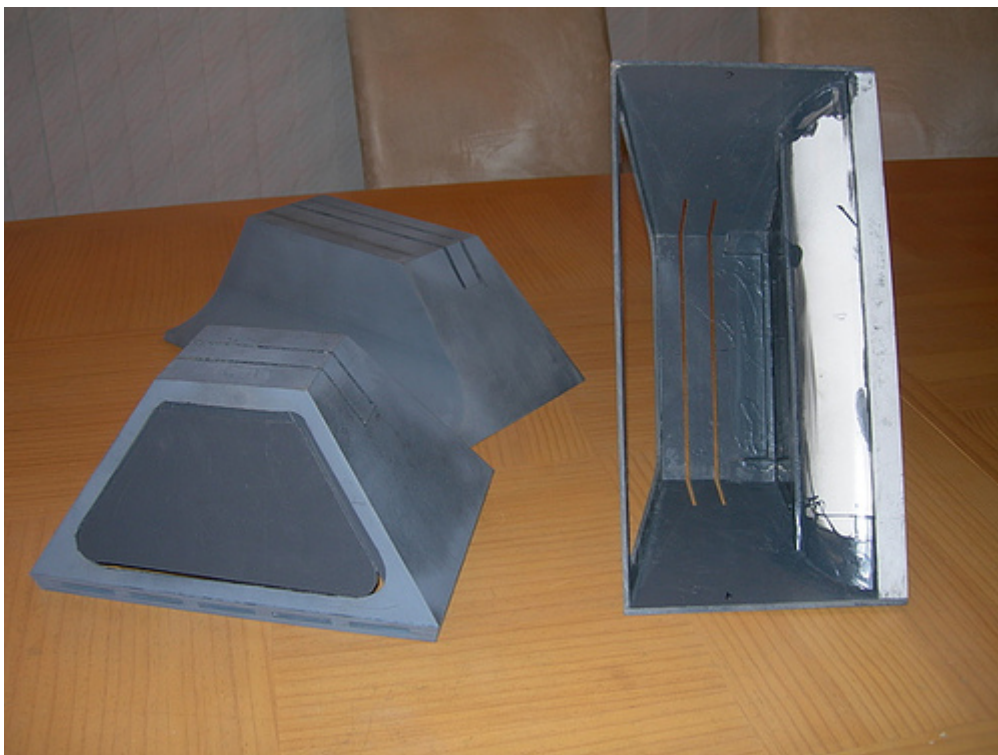
We started off by cutting the grooves to form the slot in the top of shells. Mike pushed while I pulled on the sled to feed these through on the table saw. The cuts turned out very good. A couple of simple horizontal cuts and the slots will be open.



Next we cut some reinforcements for the inside corners of the foot shells, and glued them in.



We wrapped up by starting work on the door frames for our center feet. We got the top, left and right sides cut and glued in. We plan to finish up the door work next weekend.



I also asked Mike for his opinion on my motor mount boo-boo from yesterday, and he advised me to recut and redrill. That's the plan.

Mike's foot shell quote of the day: "Remind me never to do this again."

*posted by Victor Franco at 10:59 PM* [0 COMMENTS](#)

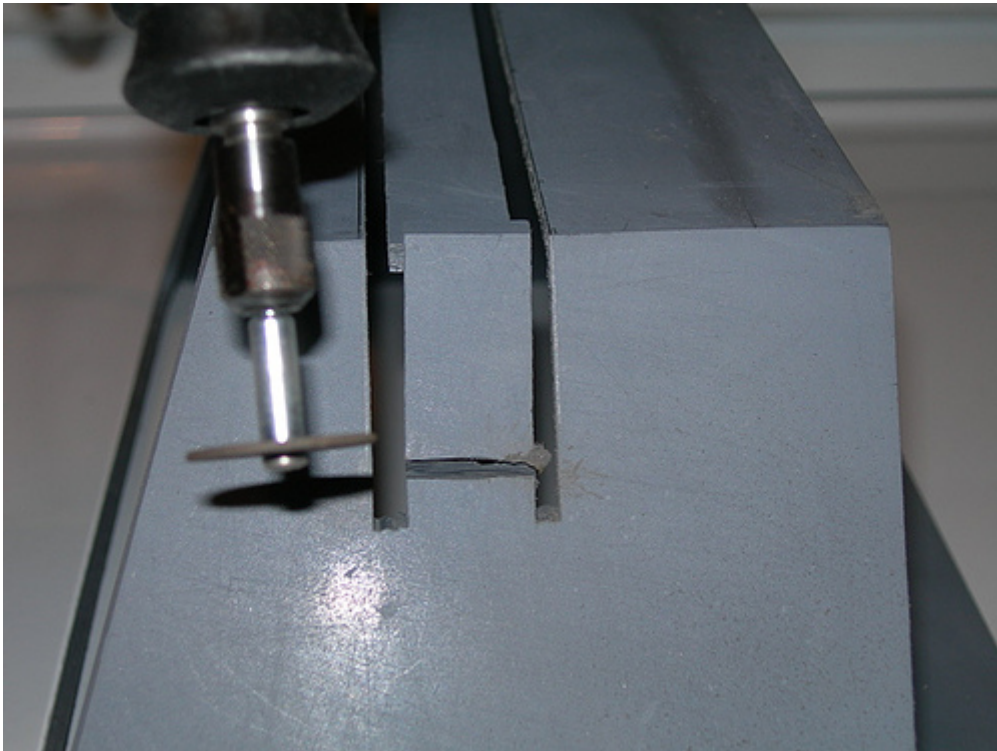
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MONDAY, MARCH 05, 2007

## Finished Cutting Slots from Foot Shell Tops

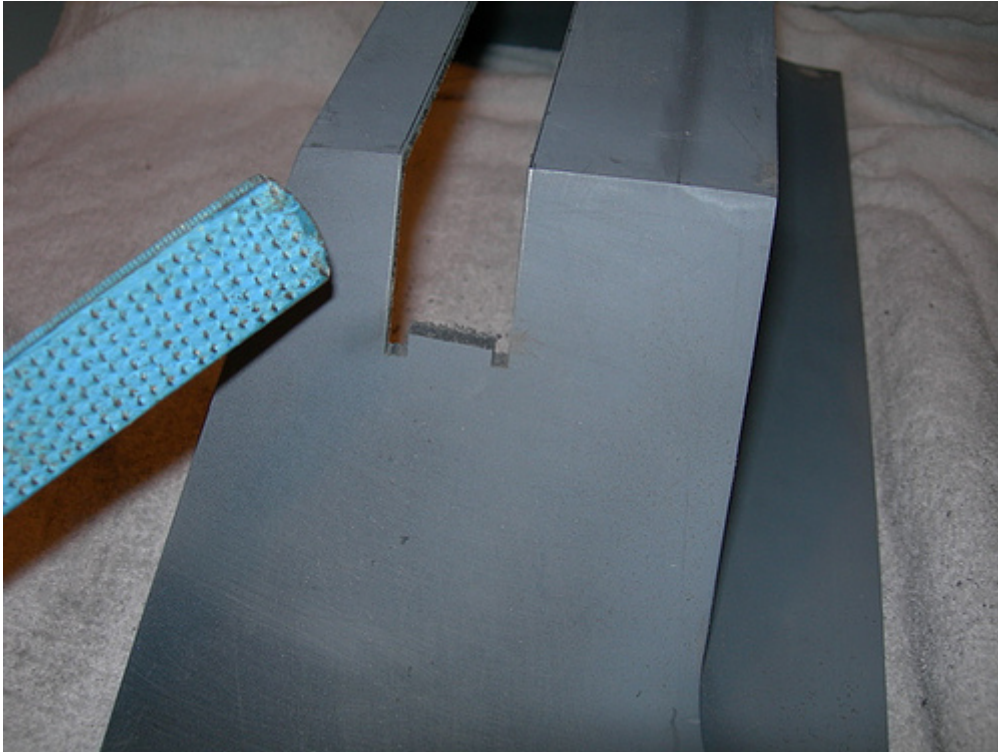
Tonight I finished the cuts that Mike and I started yesterday on the tops of the foot shells.

I started by using my Dremel with the cutoff wheel attachment to slice the main part of the material away.



Next, I smoothed out the remaining part with a file. I switched to a finer file, followed by an emery board, to smooth these out.





I will still need to bring these slots down a bit further, but I am waiting to do some more drivetrain work first, so I can fit the aluminum into the foot shell and see exactly how far down the slots need to be brought, in order to line them up with the channel that will fit within them.



*posted by Victor Franco at 10:02 PM* 2 COMMENTS

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TUESDAY, MARCH 06, 2007

## Rubber for Center Foot, Foot Shell Gap Filling

I'm starting to think about construction of my permanent center foot. The goal is to have it look like Mike's.



The foot will be made from wood, with a layer of rubber to cushion the ride. The rubber is for joining large pipes together.





I sliced it so that it can be cut flat. I have to pause until I start cutting the wooden parts of the foot, so I'll know how large the piece of rubber needs to be.



I also did some gap filling and smoothing on the center foot shell. As usual I'll



sand this down, and repeat as necessary.



*posted by Victor Franco at 10:58 PM* 0 COMMENTS

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WEDNESDAY, MARCH 07, 2007

## **Bondo, Sand, Repeat** Infinitely.

Another round of minor filling and sanding on the center foot shell. It is getting very close to being done now.



*posted by Victor Franco at 10:12 PM* 2 COMMENTS

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THURSDAY, MARCH 08, 2007

## Finished Sanding Center Foot Shell, Door Work on Outer Foot Shells

Tonight I finished up sanding the center foot shell, all surfaces are reasonably smooth now.

I spent some time working on the gap between the door and the shell for the outer feet. The width needed to be increased a bit. These may still need a little more work, but I'm waiting to see how the door frame looks after this weekend before I continue.



*posted by Victor Franco at 9:33 PM* [0 COMMENTS](#)

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SATURDAY, MARCH 10, 2007

## **Chris' Rockler Install, Finished Cutting Door Frames on Foot Shells**

Chris Romines joined us today, and Mike and I helped get his Rockler bearing installed on his Imperial droid.



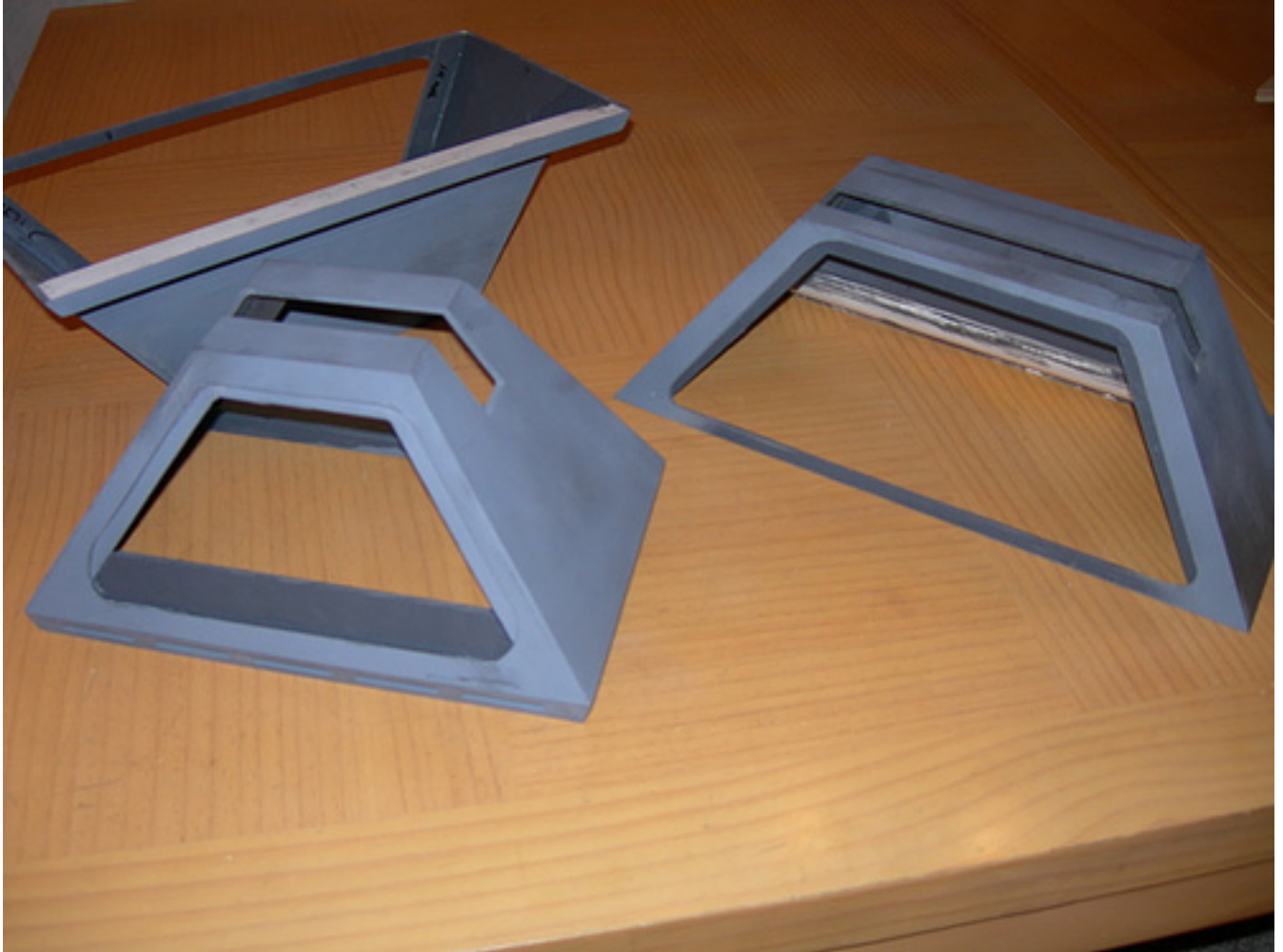


Mike and I finished cutting the door frames (that also double as reinforcements) for the foot shells today.



The bottom door frame strip on the center foot shell is intentionally high for the

moment, it will be trimmed down with the Dremel. The bottom door frame strips for the outer foot shells have not been glued on yet, I hope to do that tomorrow.



*posted by Victor Franco at 9:57 PM* 0 COMMENTS

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SUNDAY, MARCH 11, 2007

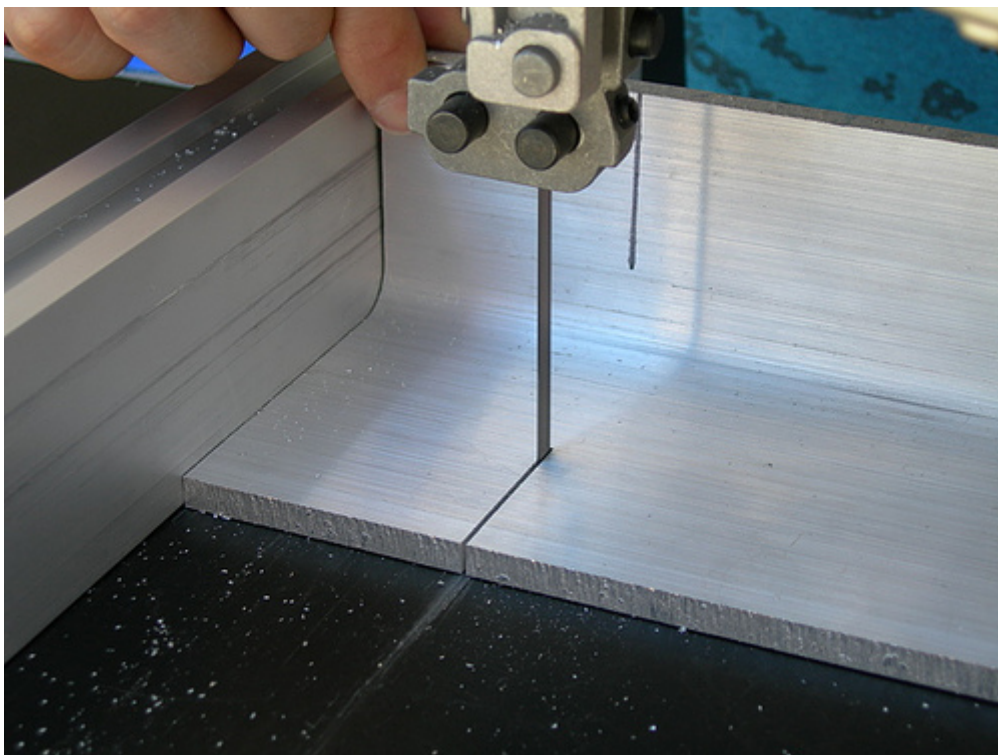
## **Recut Drivetrain Aluminum Again, Finished Center Door Frame Bottom**

Today I visited Kelvin and his band saw yet again, and for the *third time* I cut the aluminum channel for the drivetrain. This was necessary because the channel in the outer foot shells is about 1/4" longer than the H&A drivetrain spec, so there was a gap between the foot shells and the aluminum. Recutting these channels eliminated that gap.



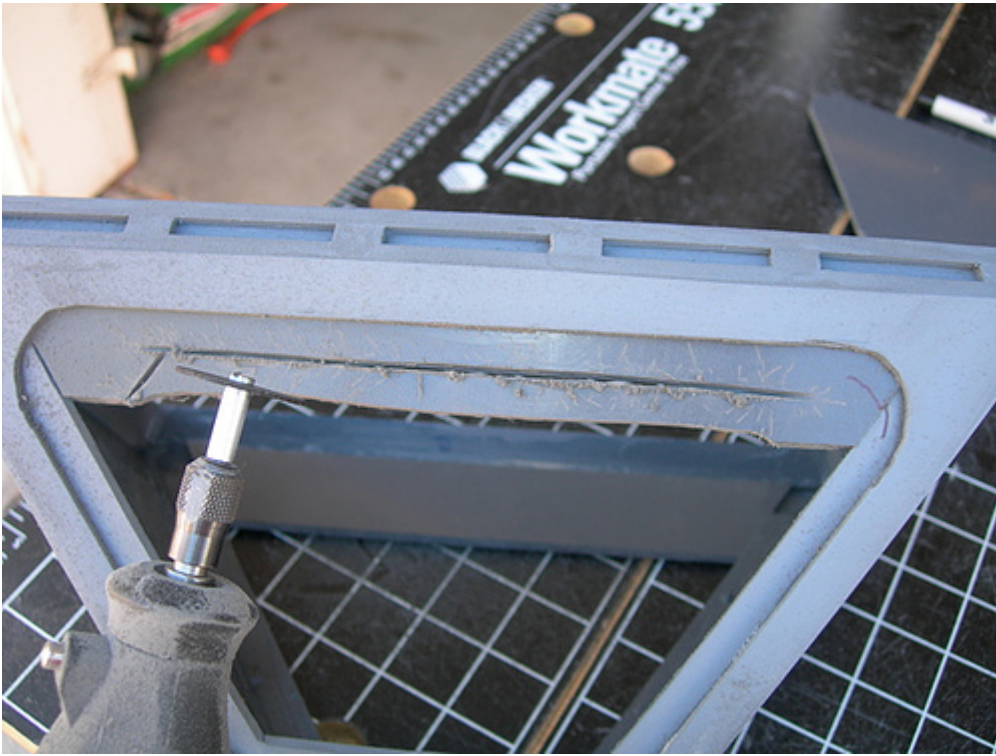


I also had to recut my motor mounts, because when I drilled the holes on the former motor mount for the screws that hold the motor on, I drilled them too high. I need to drill the holes in these pieces a bit lower this time.

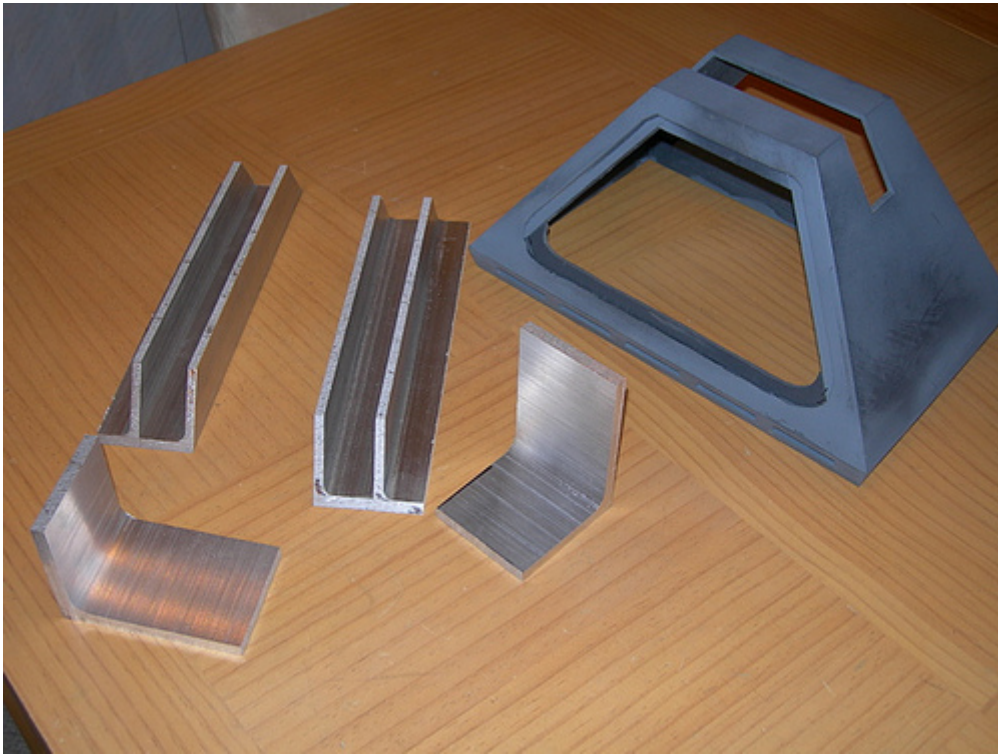




When I got home, I trimmed the bottom piece of the door frame on the center foot using the Dremel. I started with the cutoff wheel, and finished with the sanding drum.



I just need to keep moving forward on these foot shells and the drivetrain. The center foot shell is almost done, the outers aren't far behind.



*posted by Victor Franco at 11:02 PM* [0 COMMENTS](#)

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MONDAY, MARCH 12, 2007

## **Cut and Glued Outer Foot Shell Door Frame Bottoms, Bondo for Outer Shell Foot Strips & Center Foot Shell**

First off, I should mention that I had to do some photo maintenance tonight. If you see anything wrong with photos from the past, especially between February 17, 2007 and March 11, 2007, please let me know so I can address the issue(s). Now, on to today's update.

I love daylight savings! It means I get more daylight after work, and that's a good thing. This evening I used that extra daylight to cut the 34 degrees from the strips that make up the bottom of the door frame for the outer foot shells.



As usual, I used the smelly Oatley PVC glue to glue the strips in place.



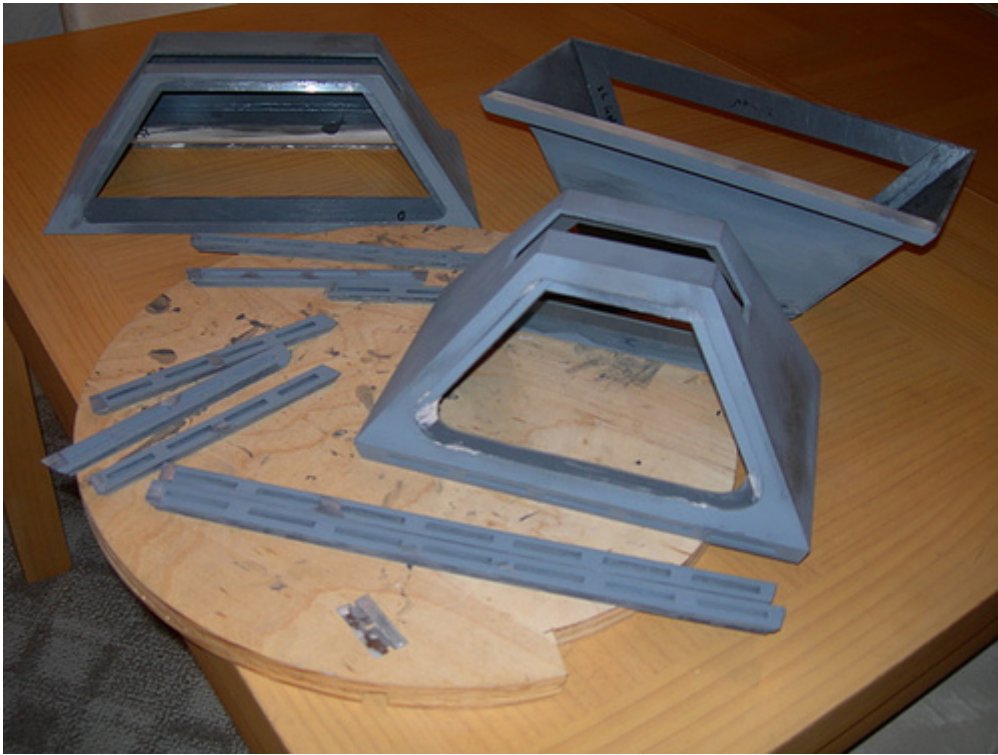
I normally don't use clamps to hold the bonded surfaces of PVC together, but on a particularly thin strip I decided to do so. I will trim the freshly glued-on strips



down with the Dremel soon, much like I did those for the center foot shell yesterday.



I wrapped up by doing some minor gap filling on the strips for the bottoms of the outer feet, and on the center foot shell. I plan to glue those strips onto the outer feet sometime this week.



*posted by Victor Franco at 11:06 PM* 0 COMMENTS

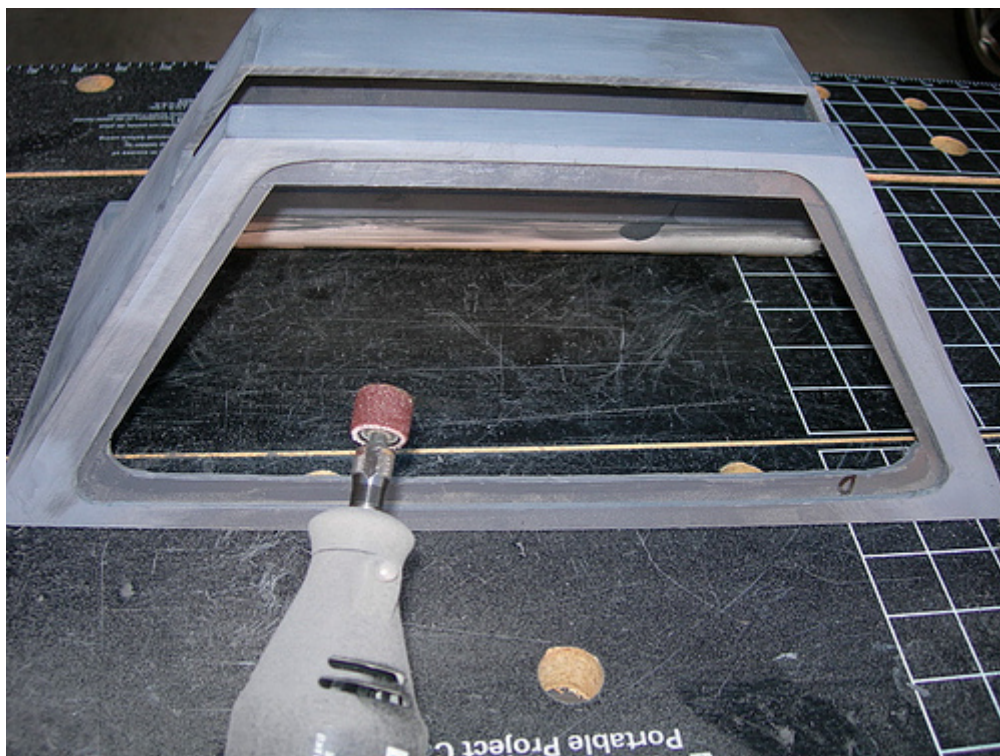
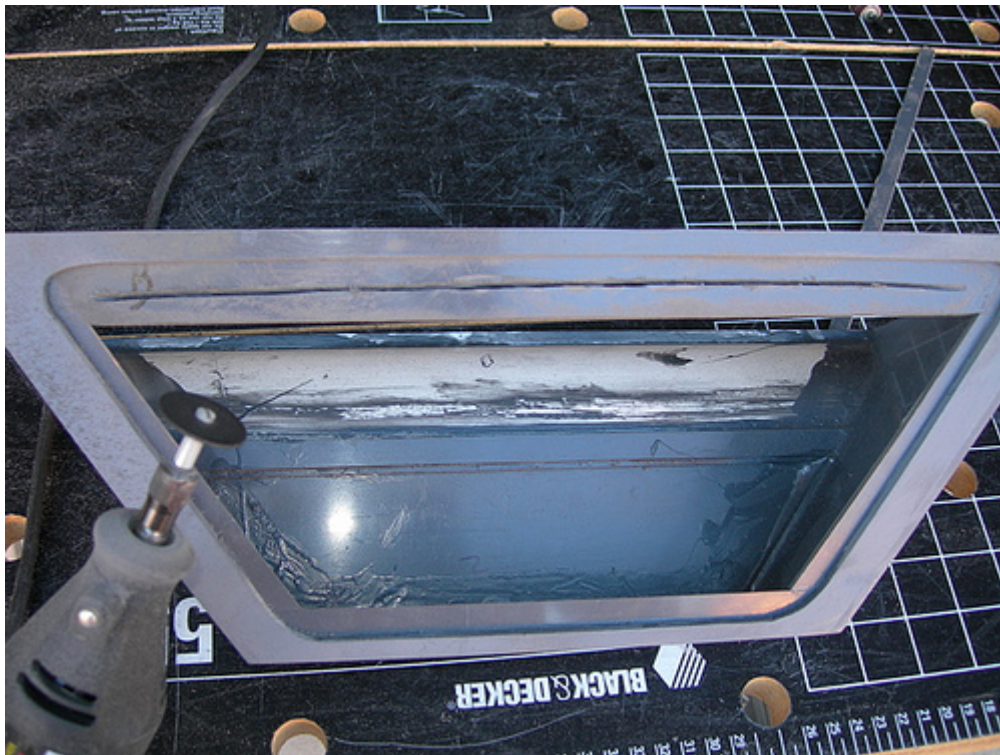
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TUESDAY, MARCH 13, 2007

## Trimmed Bottom Door Frame, Attached Bottom Strips for Outer Feet

R2 is going to be getting new shoes soon.

Today I trimmed the bottom of the door frames on the outer feet that I glued in yesterday. As with the center foot shell, I started trimming with the Dremel cutoff wheel, and finished with the drum sander.

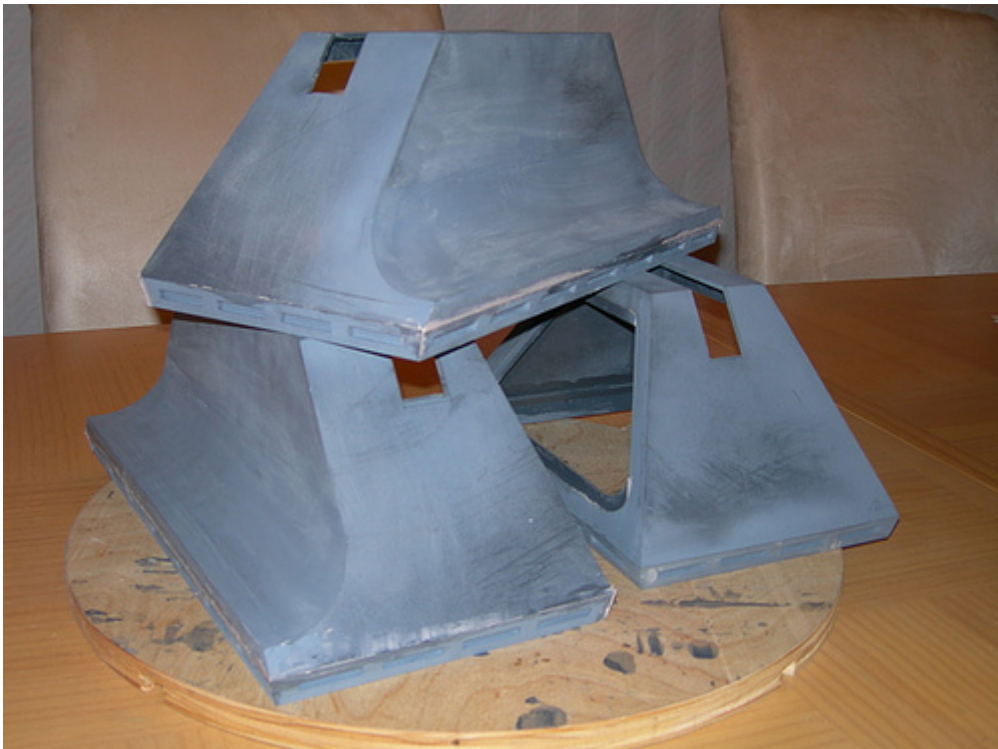


More importantly, I finally attached the strips at the bottom of the outer feet. I used PVC glue to attach each strip, one at a time.





There were some visible gaps here and there, so I used Bondo to fill those. I'll sand/fill/sand again as needed. Experience shows that this step usually takes a few days of finishing work. Right now everything is a PVC-primer-Bondo mess, but it will look a lot nicer soon.



*posted by Victor Franco at 11:15 PM* 0 COMMENTS

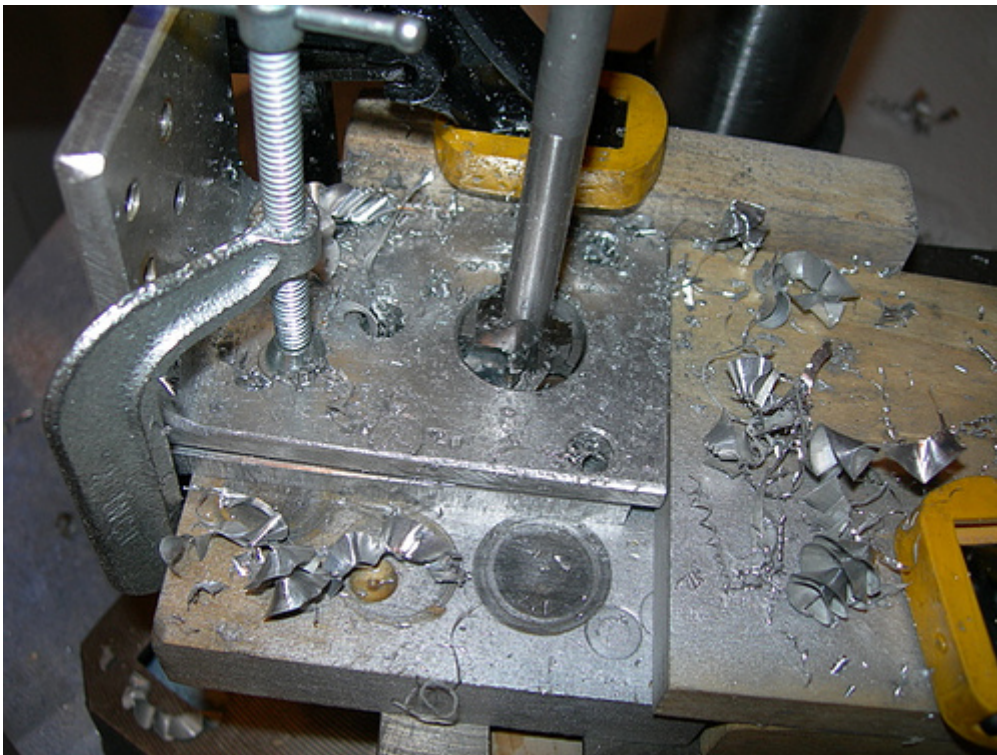
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WEDNESDAY, MARCH 14, 2007

## Redrilled Motor Mounts Correctly, Started Sanding Bottom Foot Strips on Outer Feet

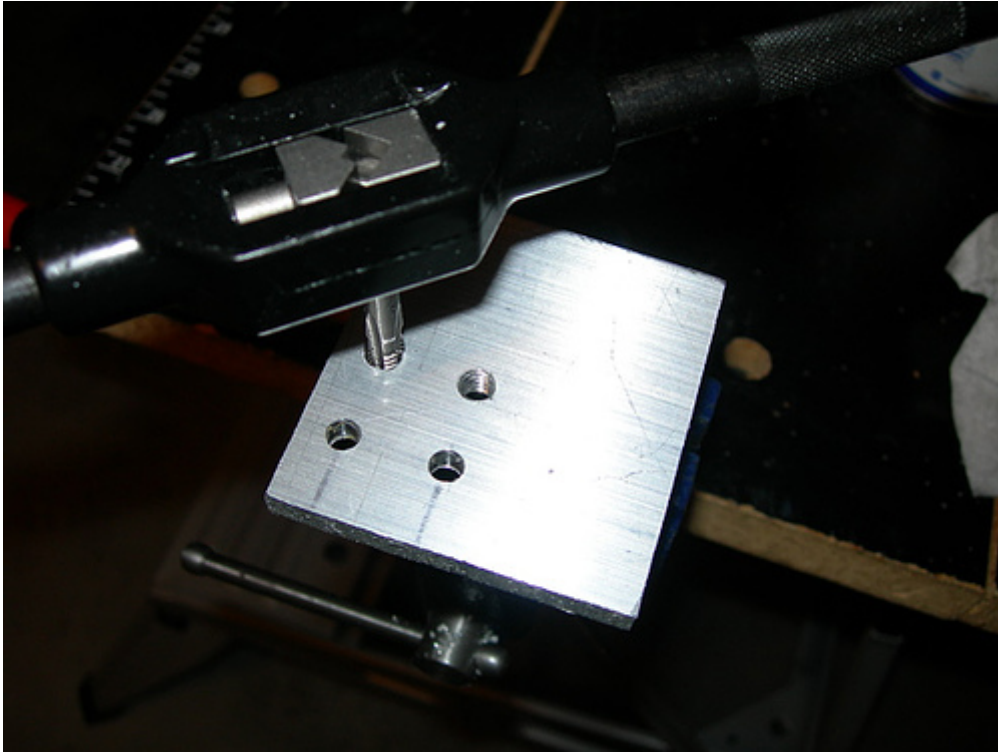
I made pretty decent progress tonight, especially if the definition of progress includes fixing previous errors. All of the do-overs have the effect of making these blog entries look very similar. Oh well.

I drilled the new motor mounts that I cut last weekend to fix the problem with the last set, where the motor was riding too high on the motor mount. I drilled the main 7/8" hole where the motor shaft and shaft adapter fit through, along with the three 5/16" holes that lie in a triangular pattern, where the screws go that hold the motors onto the mounts.

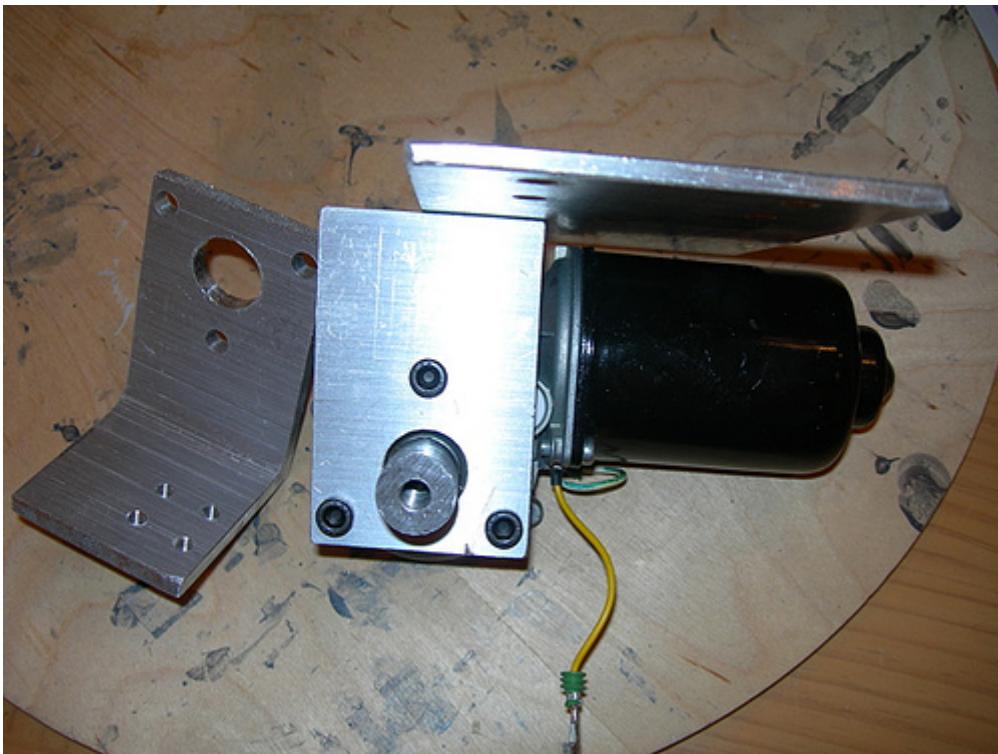


I also drilled and tapped the 1/4" holes on the top of the motor mounts, so that they can hang from the main bars of the drivetrain.





Hooray! The motor now fits under the main bar!



I wrapped up the evening by sanding down the bottom foot strips on the outer foot shells that I attached yesterday. I'll hit them with primer to see what needs



further work, and go from there.



*posted by Victor Franco at 11:08 PM* 0 COMMENTS

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THURSDAY, MARCH 15, 2007

## Foot Shell Finishing Continues

Nothing too exciting to report. The foot shell finishing cycle of sanding/filling continues. I think they'll be just about done in a day or two.

I still need to attach the doors, I hope to have that done by the end of the weekend.

*posted by Victor Franco at 10:43 PM* 0 COMMENTS

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FRIDAY, MARCH 16, 2007

## Dome Motor Wheel, Yet More Foot Shell Finishing, Cut Door Holders

I managed to squeeze in some building tonight, while also participating in the weekly R2 Builders chat.

I picked up a couple of Razor scooter wheels from Play it Again Sports in Costa

Mesa. These have a 3/4" inner diameter, to fit around the 3/4" shaft adapter attached to the Saturn motor. A spring will pull the motor and wheel into the Rockler bearing, causing the dome to spin when the motor is powered in either direction. I'll have to put a layer of tape on the shaft adapter to ensure a snug fit.

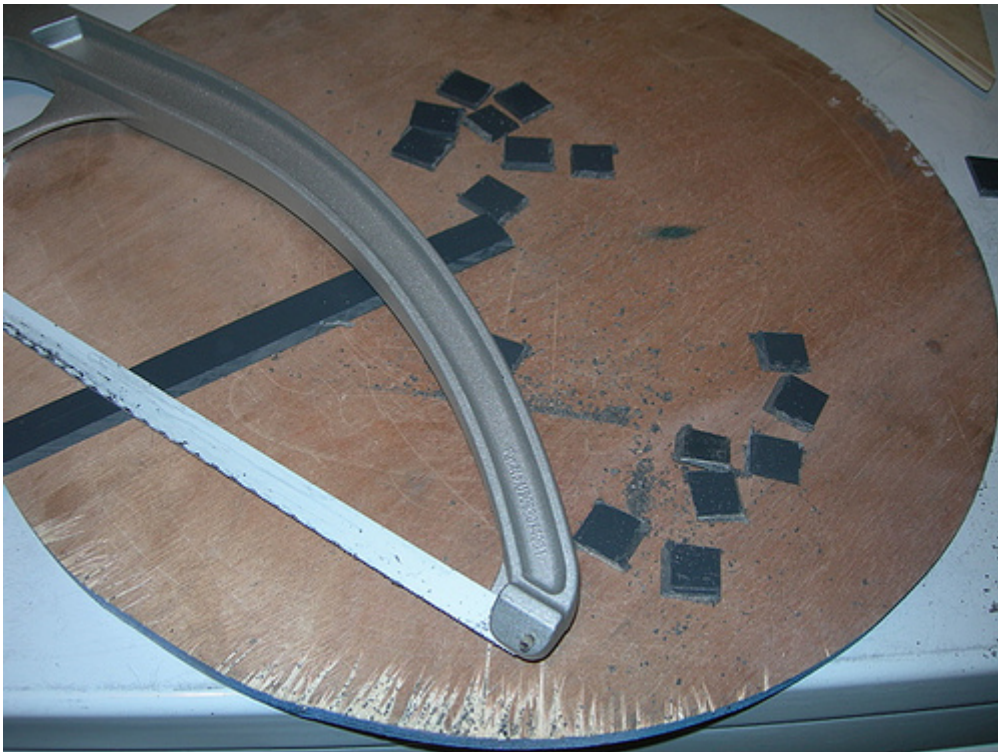
I only need one of these wheels (one dome per droid), I can use the second one to build a miniature unicycle or something.



The foot shells are nearly done. I used a little super glue to fill in small voids, and I sprayed accelerator onto the glue to instantly dry it. I sanded this smooth afterward, and now there's not much else that needs fixing. Maybe one more pass...



I wrapped up by cutting the door holders that will go on the back of the foot shell doors.



I now have a PVC tank infantry.



Two sets of these will be glued to the bottom and top of the back of the doors. On the top, the thin pieces will tuck behind the door frames to help hold the doors in place, while on the bottom the thin pieces will swivel to lock and unlock the door from the bottom of the door frame. I also will have some pieces cut to help ensure the door is centered on the frame.



Tomorrow I plan to drill mounting holes into the aluminum drivetrain channels that were cut last weekend.

*posted by Victor Franco at 11:36 PM* 0 COMMENTS

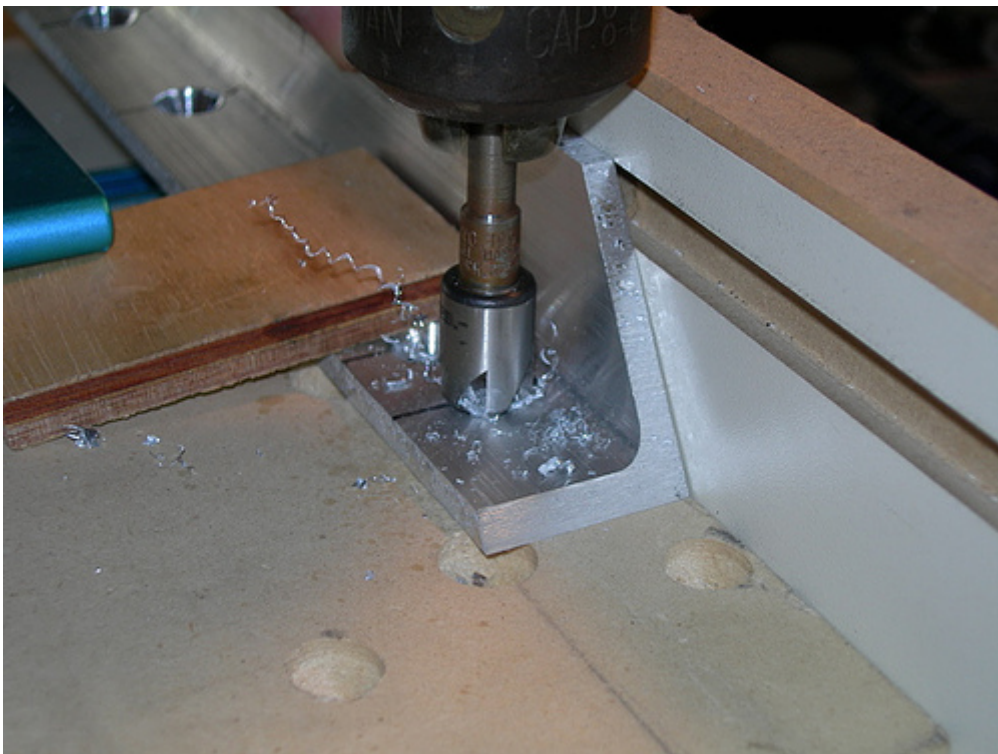
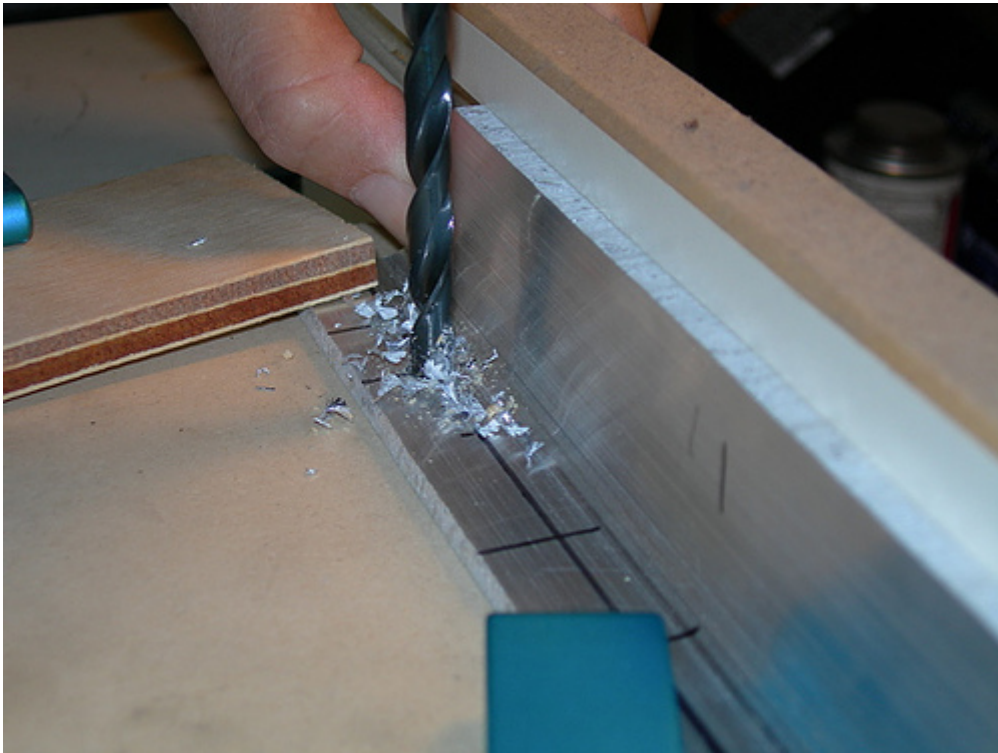
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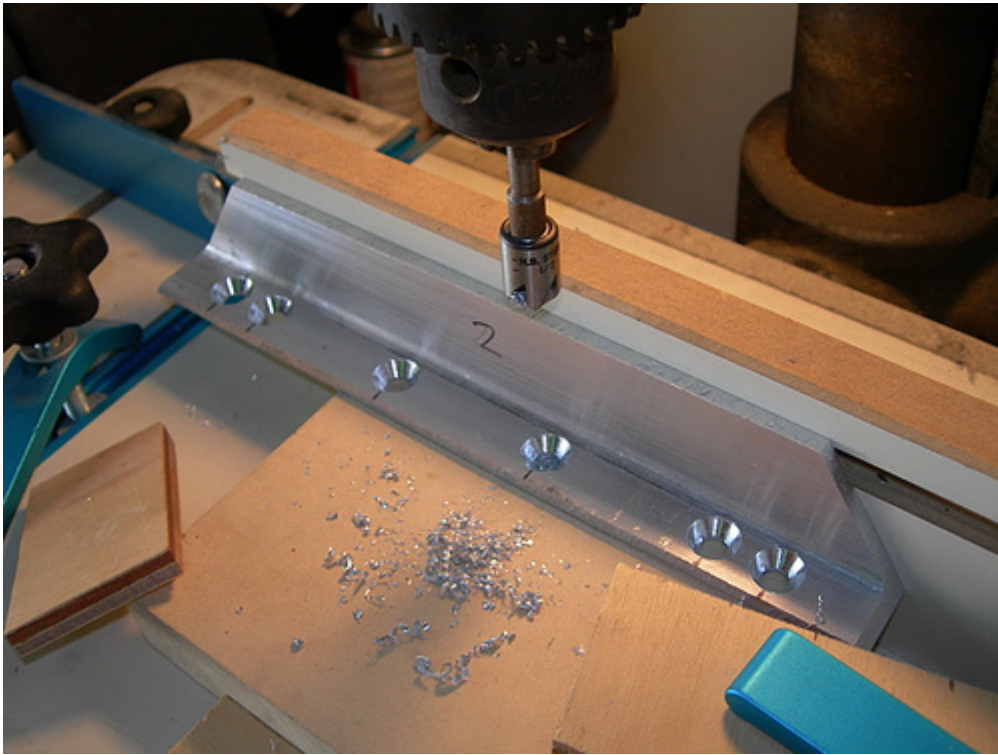
SATURDAY, MARCH 17, 2007

## Drilled Drivetrain Channel & Main Bar

I went to Kelvin's again today to drill some holes in the drivetrain channel that we cut last weekend. His drill press has a fence, which I wanted to use to get a nice, straight row of holes.

Twenty-four holes were drilled and countersunk (twenty-five if you count a practice hole) with a 0.266" drill bit and a 1/2", 82 degree countersink bit.



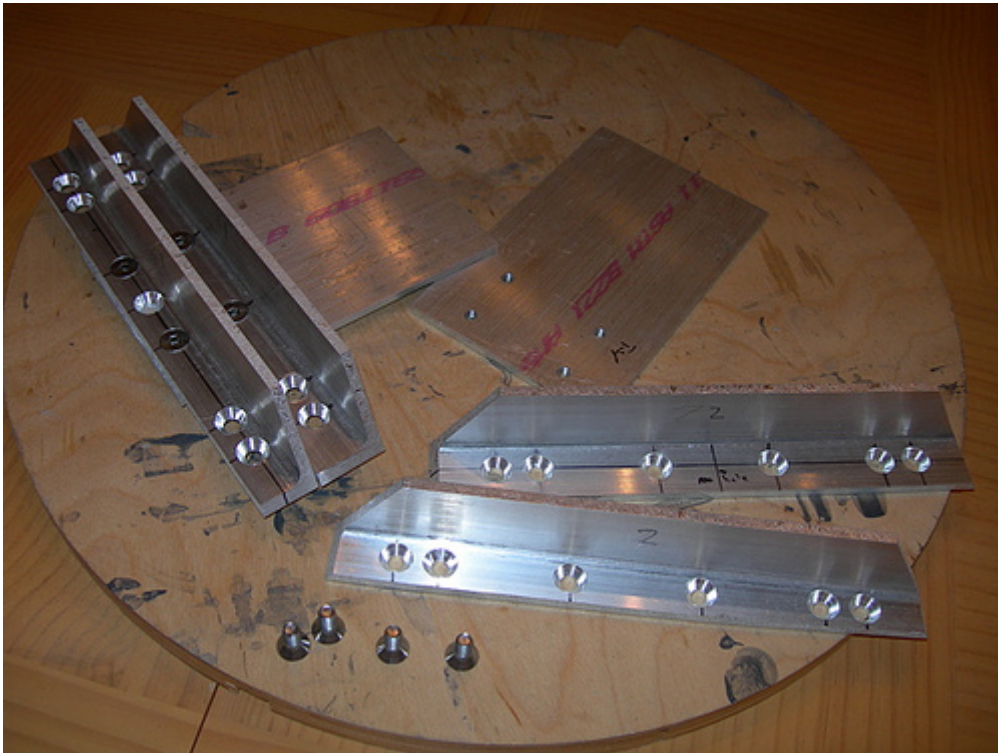


When I came home, I worked on drilling and tapping the main bars that will hang from the channels, and from which the motor mounts will hang. I used a #7 drill bit, followed by a 1/4-20 tap to drill and tap these.





Everything seems to line up properly, the screws go through the countersunk holes in the channel and they screw into the main bar. I still have four more holes to drill into each of the main bars for the motor mounts, and I need to drill some holes in the aluminum wheel holders.



*posted by Victor Franco at 9:34 PM* 2 COMMENTS

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SUNDAY, MARCH 18, 2007

## Started Cutting Permanent Center Foot

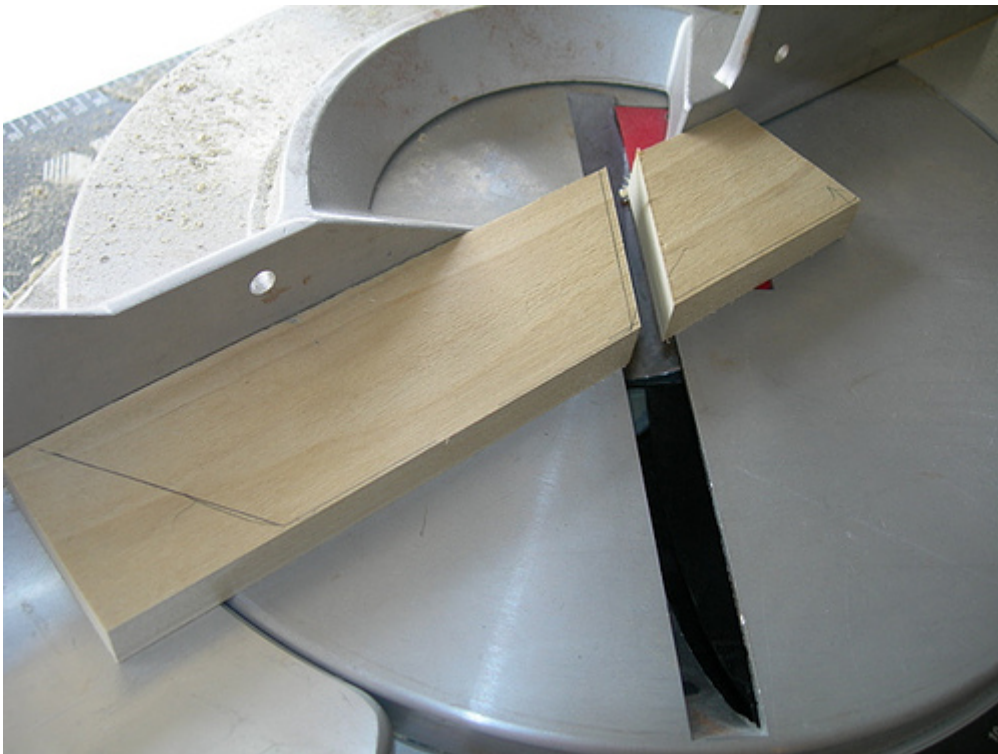
Way back in February of last year, I made a quick, sloppy center foot to get my droid on three legs. Now it's time to make the permanent center foot that will fit inside my PVC foot shell.

Today simply consisted of lots of cuts to make up the top part of the center foot.

First, there is the rectangular base that the wooden channels will ride atop.



And then there are the channel walls themselves.

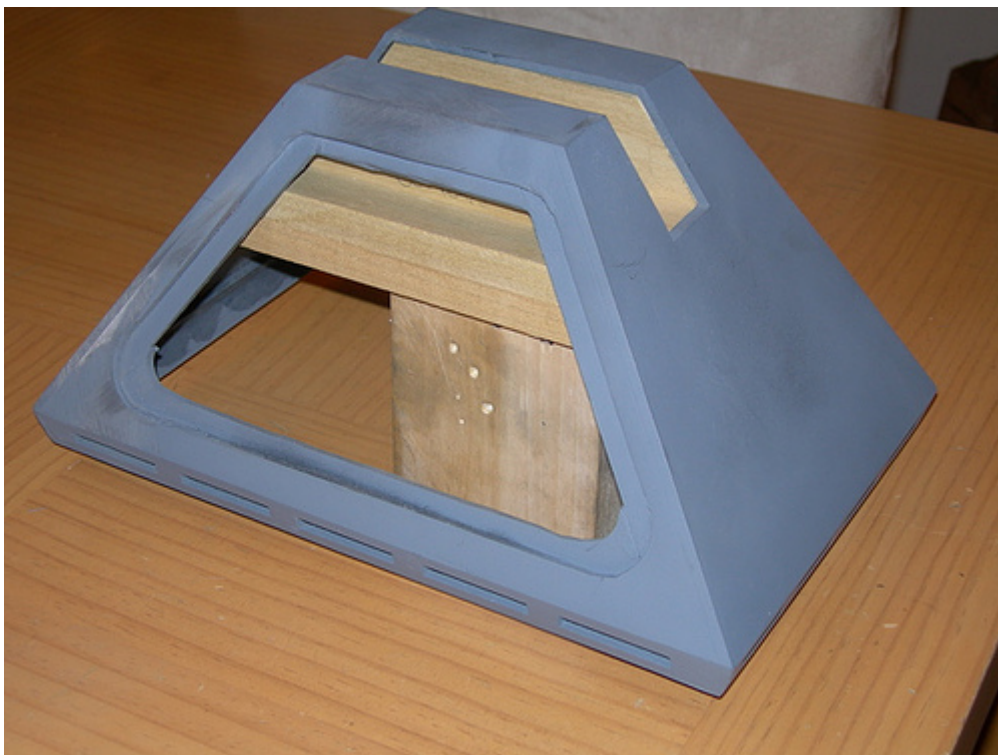


I cut the channel walls  $\frac{1}{2}$ " higher than normal so that I could add  $\frac{1}{2}$ " thick supports on each side to help keep them from buckling.





The final result is a nice channel that fills the foot shell groove in the middle. The center ankle fits perfectly in there.



A layer of rubber will go underneath today's work, and beneath that will go a couple of layers of 1/2" plywood glued together. The two caster wheels will attach to the plywood. I may have to find smaller casters (I can salvage the nice wheels), the footprint of the top of them is too large.

I wrapped up by test-fitting the outer foot shells on the ankles to see if they fit. The left shell fits fine, but the channel gap in the right shell needs to be widened a tad in order for the right ankle to fit. I'll do some light filing and all should be well.



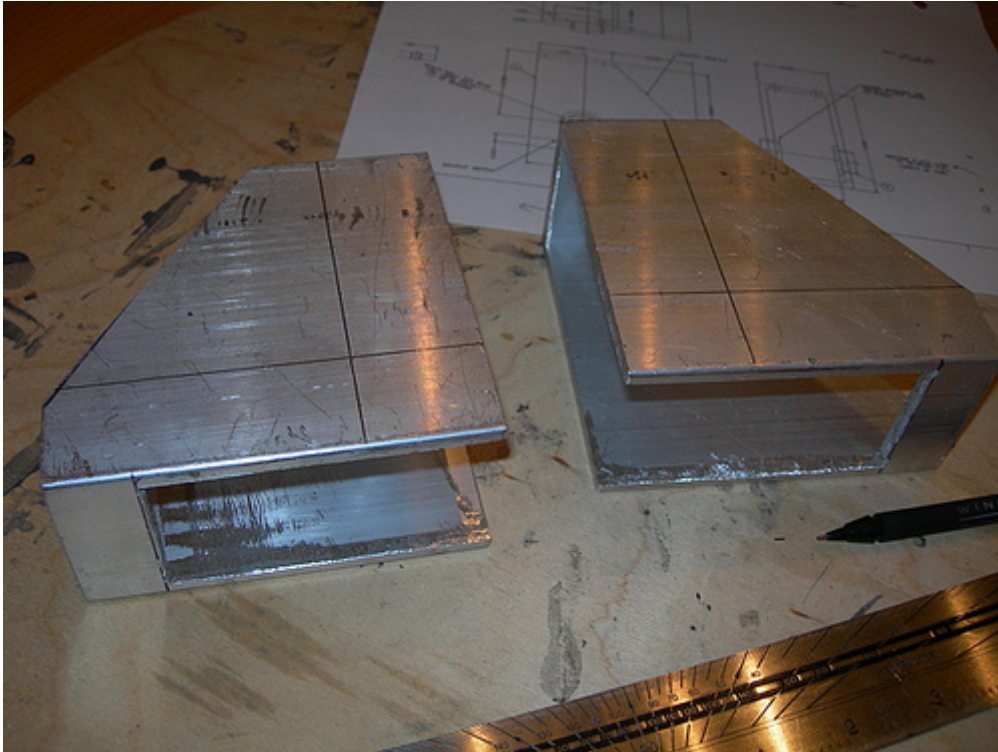
*posted by Victor Franco at 10:18 PM* 2 COMMENTS

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MONDAY, MARCH 19, 2007

## Marked Drivetrain for Drilling Holes for Axles

I didn't get a whole lot done tonight. All I had time to do was mark the drivetrain aluminum where I'll be drilling 1-3/8" diameter holes for the wagon wheel bearings that will go in place for the wheel axles. I plan to visit a friend-of-a-friend's machine shop tomorrow evening to drill these relatively large holes.



On a less delightful note, Mike confirmed my fears that the poplar wood I used yesterday for the center foot will not be structurally strong enough. I'll need to use plywood.

I had chosen the poplar because I am just about out of 1/2" plywood, and what little I have is of questionable quality. I have lots of nice smooth poplar, but I had a sinking feeling it would not be structurally sound.

Well, I built the temporary center foot more than once, why not the permanent one? By the time this droid is done I will have almost built two of them - one for real, and one for the scrap bin.

*posted by Victor Franco at 11:16 PM* 0 COMMENTS

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TUESDAY, MARCH 20, 2007

## More Shaft Adapters, Wheel Housing Drilled & Milled, Battery Recharger for Remote

Lots of pictures today.

Back on [January 28th](#) of this year, I drilled four shaft adapters for the drivetrain and dome drive. Two of the adapters turned out fine, but the other two had holes that were a little off-center. So early today on the way in to work, I went back to Industrial Metal Supply and purchased another foot of 3/4" diameter steel rod. I



had them cut as many 1.25" sections as possible (9) for the shaft adapters.

They use a humongous band saw to cut the steel rod.



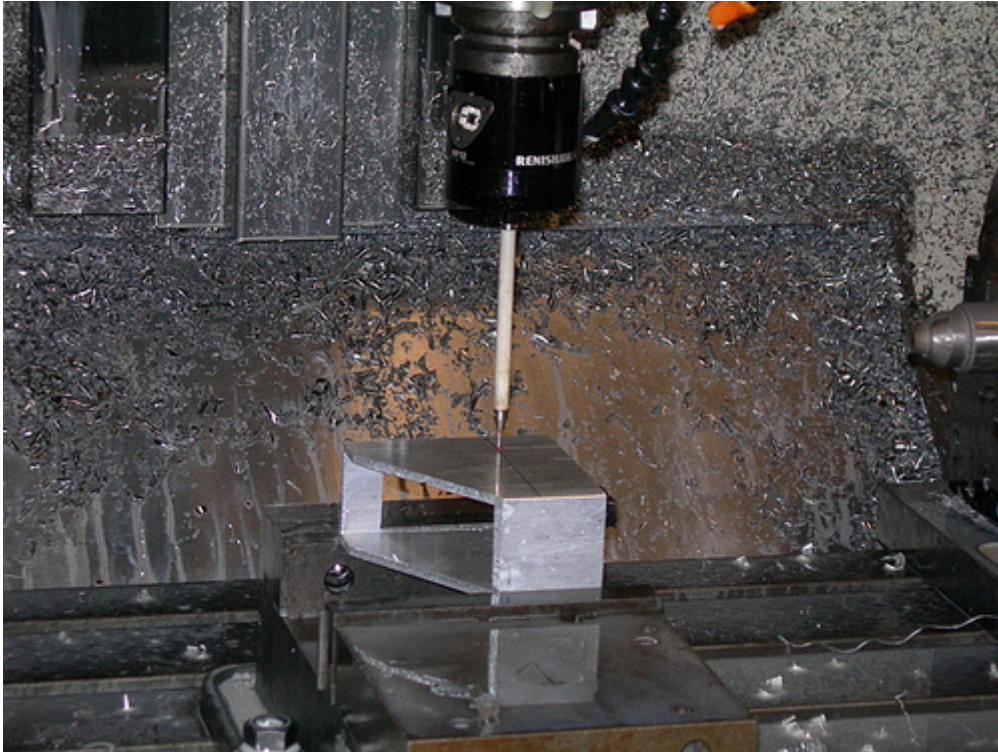
Now I have a lifetime supply of raw material for shaft adapters for my drivetrain and dome drive.



In the afternoon, I went to my friend-of-a-friend's machine shop to have the wheel housing of the drivetrain cut and milled.

First, they calibrate the CNC machine so that the 1-3/8" diameter hole will be exactly where it belongs.





Then, a big bore starts drilling the hole.

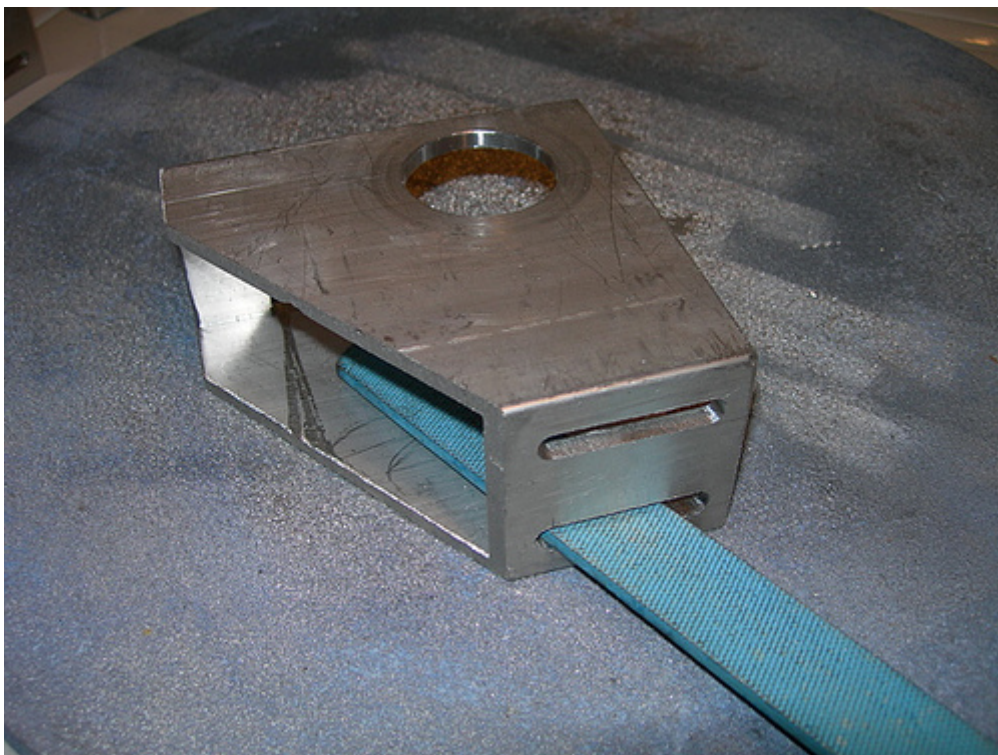


After all the holes were drilled, they milled out the slots on the top that will allow the chain to be tensioned.





When I got home, I found that the slots on top were just slightly too close to each other, so I had to file one of them on each wheel housing to widen it slightly.



Everything seems to fit as far as I can tell.



I also tried out one of the foot shells to see how it would fit, and it also seems to be in pretty good shape. I will need to file the channel area on the foot shell a bit lower to match the drivetrain channel, but I already planned on doing that.





Finally, I bought this today, whatever it is.



posted by Victor Franco at 11:02 PM 2 COMMENTS



WEDNESDAY, MARCH 21, 2007

## Installed Bearings, Wheels on Drivetrain

I spent most of the evening in the garage tonight, fitting the bearings into the holes that were drilled into the wheel housings yesterday. The bearings are slightly tapered, enough that they didn't quite fit through the holes. I used the drill press with the drum sander to sand the edge off the bearing. I let the bearing spin at a slow, constant rate against the sanding drum, in order to get an even sanding all the way around.

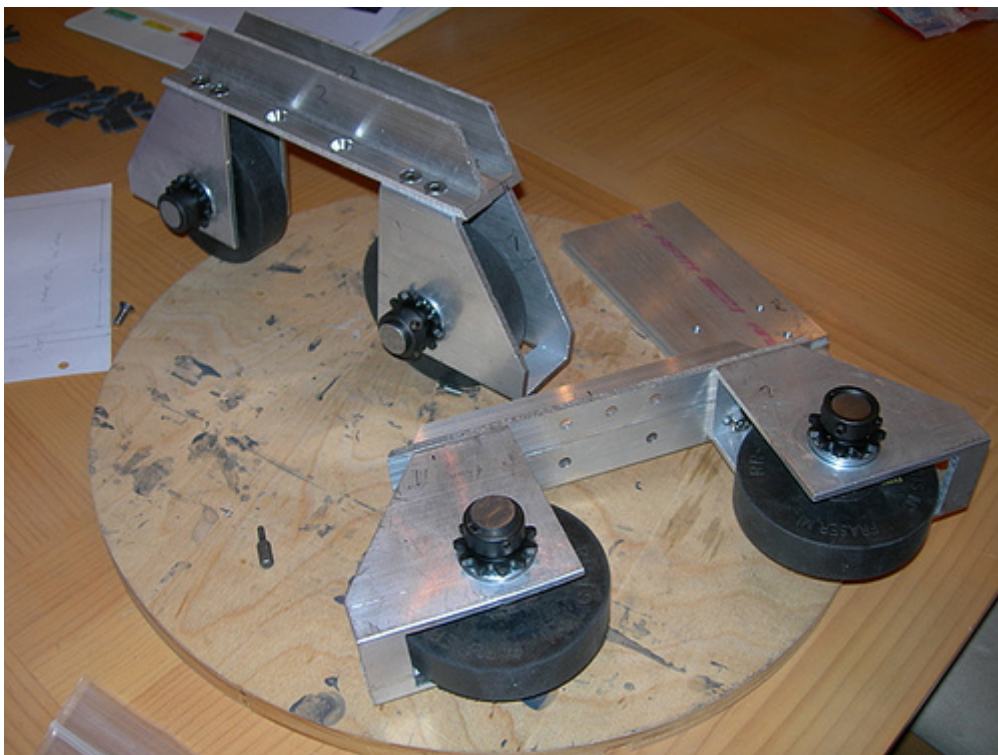


Once the bearings were all pressed into the holes, it was another chore to get the wheels in there. It is a *very* tight fit. I had to sand down the inboard side of the bearings to get everything to fit, and it is under stress. I may go back and sand some more, to relieve some of the stress.

The axles went in without too much fuss, it's just a matter of aligning everything perfectly.



I wrapped up tonight's work by screwing the channel down in place and installing some of the gears, to see how it all fit together. I think everything is still looking good.



I still need to drill four holes in each main bar to hold the motor mounts, and I need to drill holes in the channel for the ankle bolts. At that point, the main part of the drivetrain will be done, and all I will need to do is install the chain. I also still need to install the doors on the foot shells.

*posted by Victor Franco at 10:26 PM* 0 COMMENTS

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THURSDAY, MARCH 22, 2007

## Received Battery Chargers, More Drivetrain Assembly, Finished Footshell Filling

Today I received the battery chargers for the main batteries that will power my droid. I'm still waiting on the actual batteries, they should arrive soon. The charger I received a couple of days ago is for the remote control transmitter and receiver batteries.



I did some more assembly work on the drivetrain tonight. I needed to see how everything fit together before I drill the final few holes.





I *think* (and hope) that I'm just about done with the foot shell finishing work. I filled the last of the small voids in a small edge of each of the outer shells with Bondo.

As a reminder, a large portion of the inboard side of these outer foot shells will be completely cut out and removed to allow the drivetrain to pass through, into the battery boxes (which will also need to be cut). Thus, I did not bother finishing that area of the foot shells to perfection.

Tomorrow I'll sand, and then I think the foot shell finishing is complete. Yes, I still need to attach the doors. I'll get to that eventually...



*posted by Victor Franco at 11:08 PM* [4 COMMENTS](#)

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FRIDAY, MARCH 23, 2007

## Finished Adding Foot Shell Reinforcements

This morning I sanded smooth the Bonda I applied last night. Barring any future mistakes that require repair, the foot shells are done being filled and sanded. (I reserve the right to even out the seam between the door and the shell via filling and/or sanding as needed.)

I finished gluing in the last of the foot shell reinforcements. Each of the outer shells got a pair of thin strips of PVC to help reinforce the bottom strips on the front and back of the shells.



I removed the temporary feet from my droid in anticipation of being able to install the drivetrain on the outer feet. I plan to recut the center foot tomorrow from high quality plywood that Matthew Henricks is making available to me.

It looks like R2 parked in a bad neighborhood.





*posted by Victor Franco at 10:14 PM* 0 COMMENTS

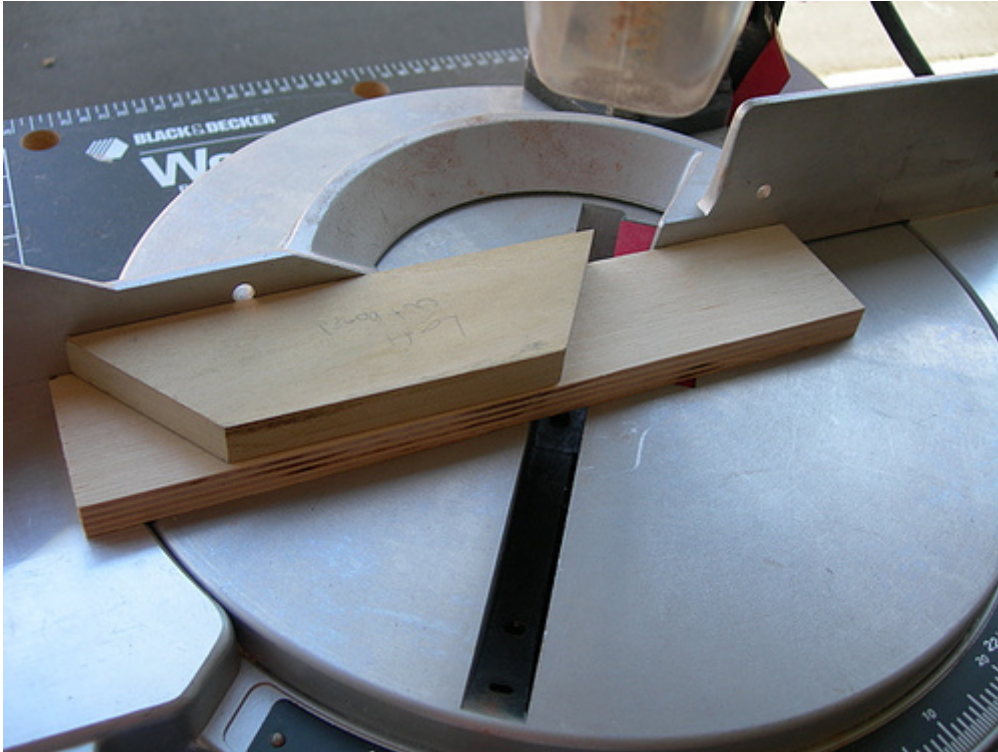
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SATURDAY, MARCH 24, 2007

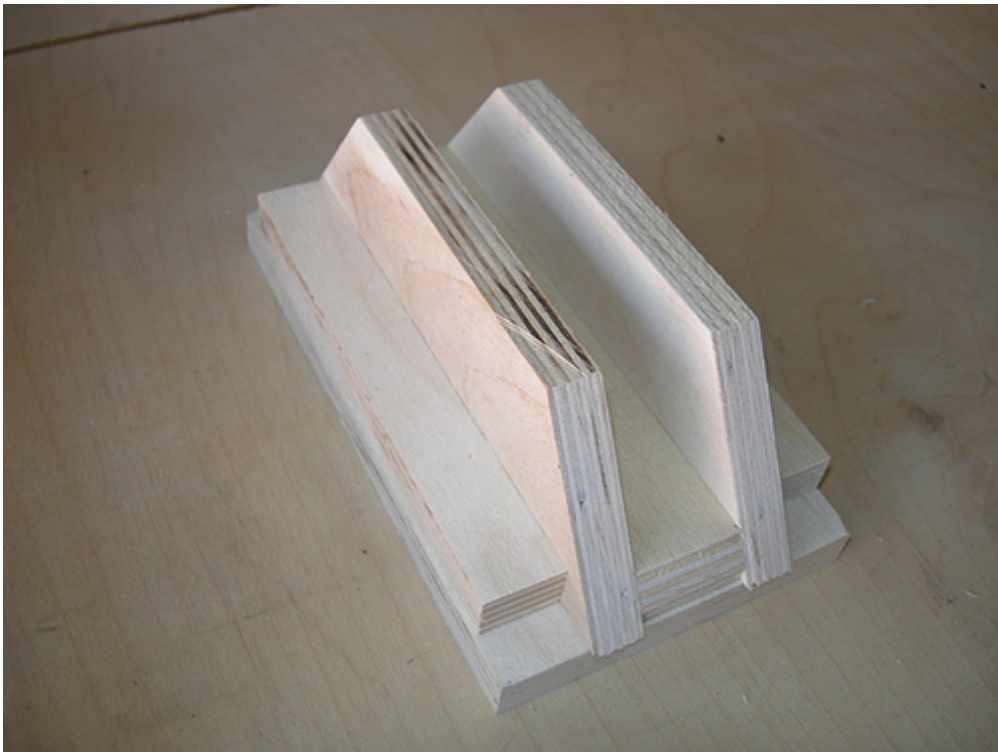
## **Recut Top of Center Foot, Mounted Half Moons**

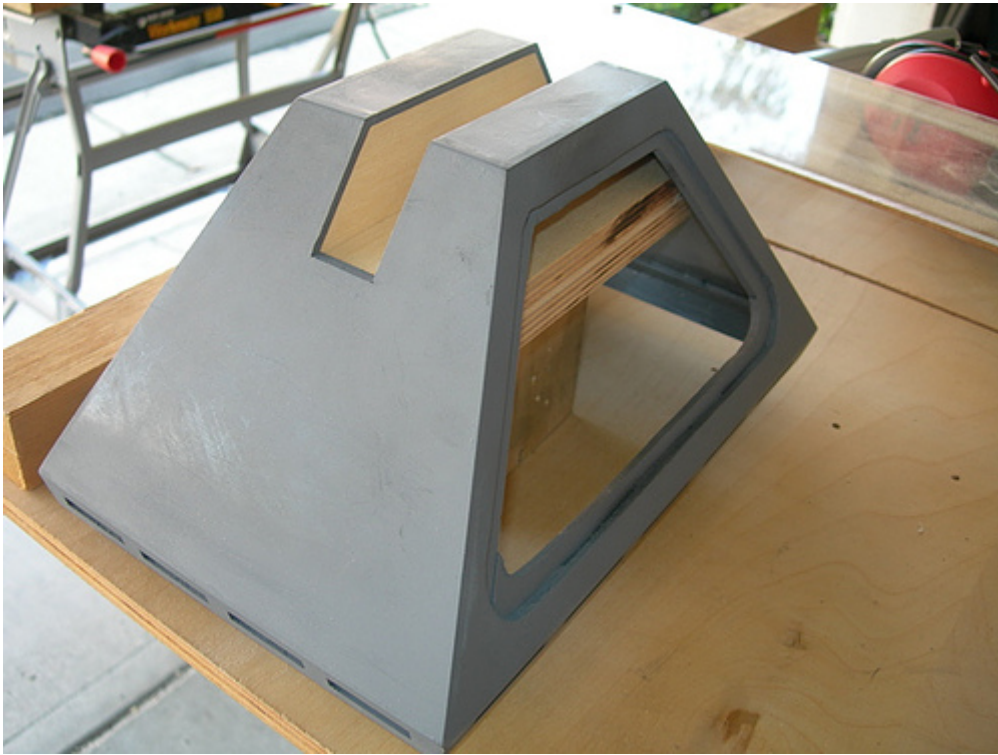
A big thank you to Matthew Henricks, who generously donated some 1/2" high quality plywood for the rebuild of my center foot.

The bad news is that I had to junk my center foot made from poplar, the good news is that today's recut of the center foot from Matthew's plywood went extremely fast, as I was able to use the poplar center foot pieces to guide the plywood cuts.



Like last week's version, this version seems to have turned out pretty good. The fit is just about right. Note that I still need to build up the bottom of the foot to accept the caster wheels.



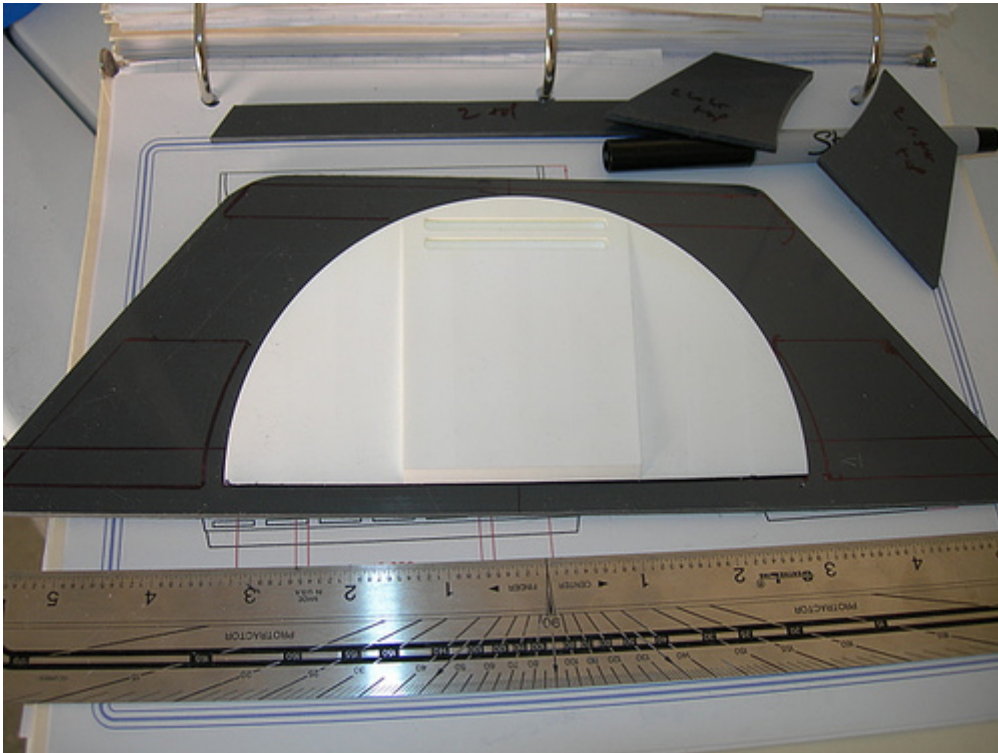


Next, I returned to the foot shells. Today I mounted the half moons onto the doors.

I started by placing all the parts on the foot shell doors. The outer foot shell doors have a few details on them, while the center foot shell doors just have the resin half moon pieces.

I traced each item, and then removed everything except the half moon, and taped it down in place.





I placed another half moon on the drill press table, so that when I set the door upside down with its half moon taped underneath it, the back of the door would be perpendicular to the drill bit. I marked a location on the back of the door dead-

center, and two more marks one inch to the left and right, for the three #4 1/2" screws that will hold the half moons onto each door.



The doors seem to be holding the half moons just great!



I had intentions of getting the door holders installed today, but that didn't happen. One of these days it will though.

*posted by Victor Franco at 10:21 PM* [0 COMMENTS](#)

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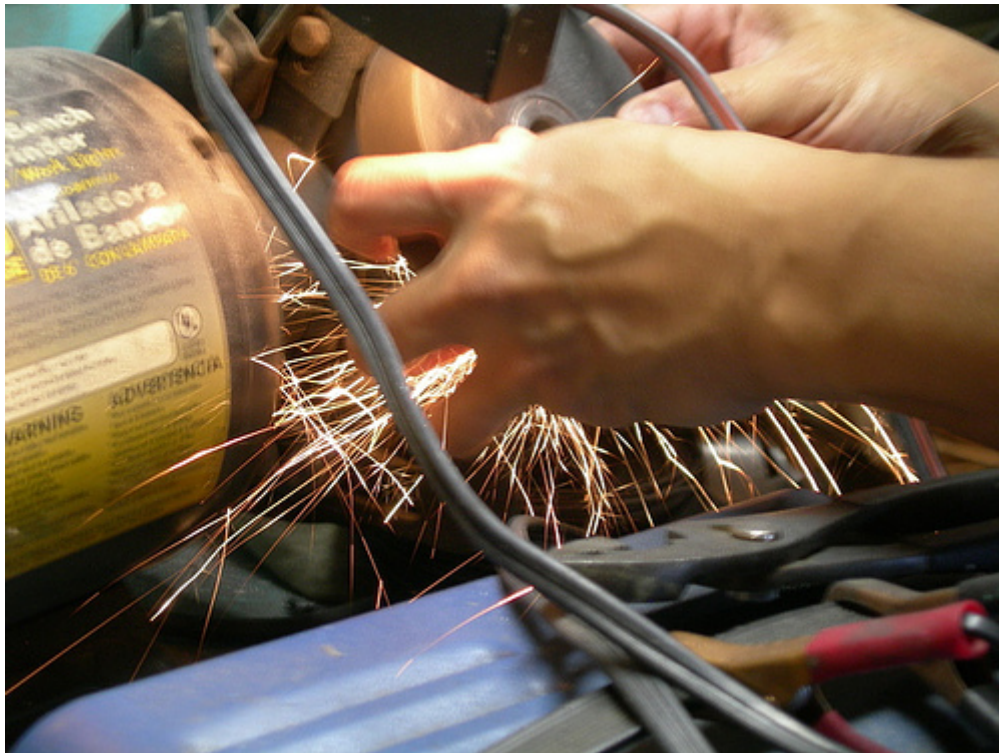
SUNDAY, MARCH 25, 2007

## Ground Down Wheel Hubs, Drilled Ankle Drivetrain Holes, Drilled Shaft Adapters, Cut Battery Boxes

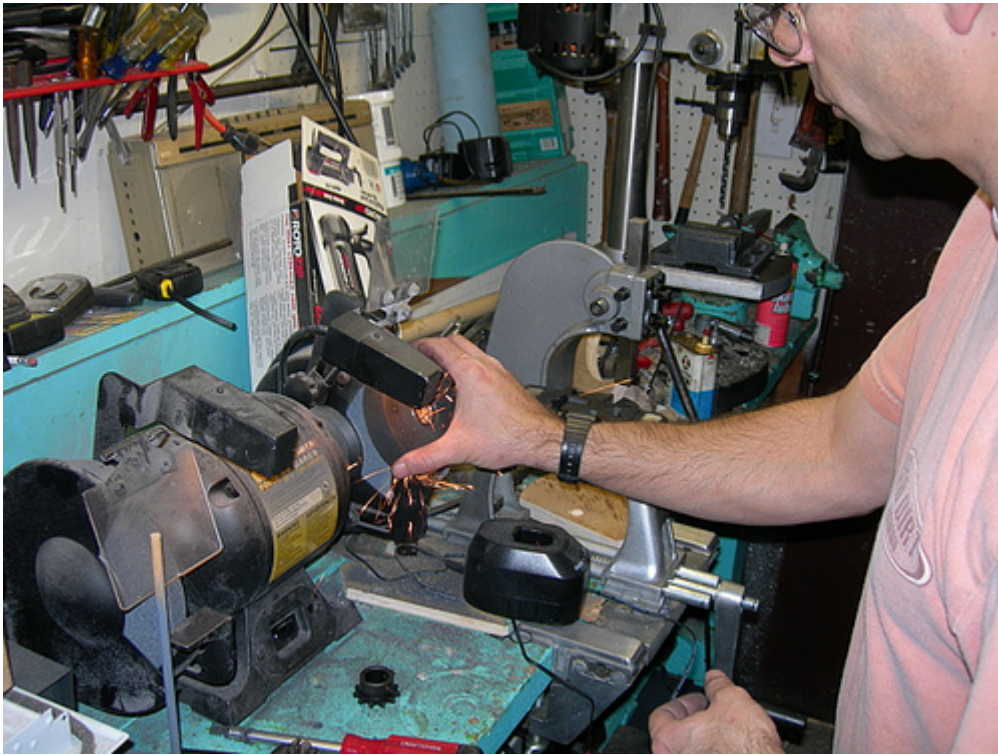
Today I went back to Mike's, where good things always happen.

I showed Mike the very tight fit of the wheels in the wheel housings. Mike took the wheels to the bench grinder to help get them to fit much better. Mike ground down the first one, I did the other three. After the wheels were shaved, we added lubricant. Now the wheels spin nice and free in the wheel housing.

The grinder makes neat sparks.







I had been paralyzed with fear on making one of the last cuts to the drivetrain, the hole for the ankle bolt that attaches the drivetrain to the tip of the leg. I wasn't sure how best to drill this hole. Should the channels be cut separately? Together? How to position them?

In the end, we drilled both channels as they would be mounted in the drivetrain. We drilled slowly and were able to successfully drill straight holes, 1/2" in diameter. I plan to use a 1/2"-to-3/8" bushing, and a 3/8" bolt in the hole.



We also drilled some more shaft adapters, using the 3/4" steel rod I had cut this past week.



Last on the agenda was cutting out a square from each of the battery boxes, for

maintenance purposes. This square will be on the inboard side of the battery boxes, and will be held in by a screw in each corner.

Mike used his super-human Dremel abilities to cut very straight lines with the small saw blade attachment. The first battery box gave Mike a pretty good coating of PVC dust.

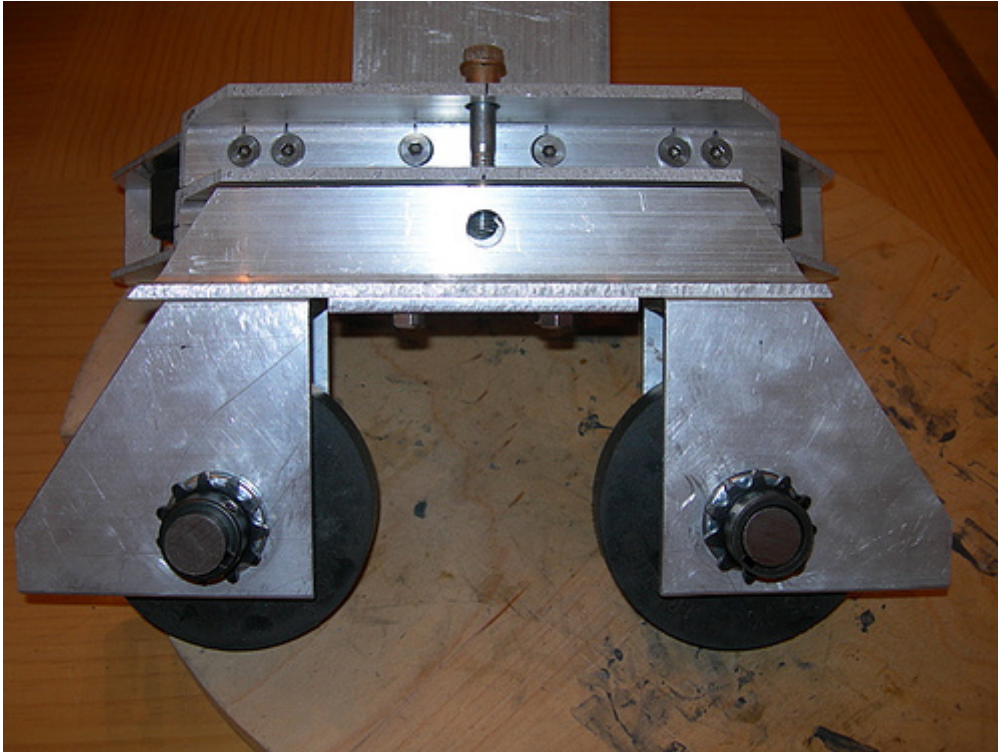


He managed to avoid a second coating when he cut the other battery box.





The drivetrains are almost done. I just need to drill and countersink the four holes in each main bar for the motor mounts, and I need to assemble the chain.



Thanks for the two millionth time, Mike. The finish line is drawing closer, I won't be bothering you for help that much longer.  
*posted by Victor Franco at 11:03 PM* 0 COMMENTS

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MONDAY, MARCH 26, 2007

## Main Batteries Arrive, Attached Foot Shell Doors, Marked Main Bar for Drilling

Today, the [batteries I ordered from ragebattery.com](#) arrived. I ordered a total of eight 6-volt, 12 amp-hour batteries. My foot and dome motors will run off of 24 volts, so those will be wired in series. The sound system runs off of 12 volts. (The dome electronics run separately off of four D cells.)

I ordered enough batteries to have a spare set when needed. The 6-volt package is reasonably small and inexpensive.



I finally installed the foot shell doors tonight.

First, I taped the doors in place, as centered as I could get them.





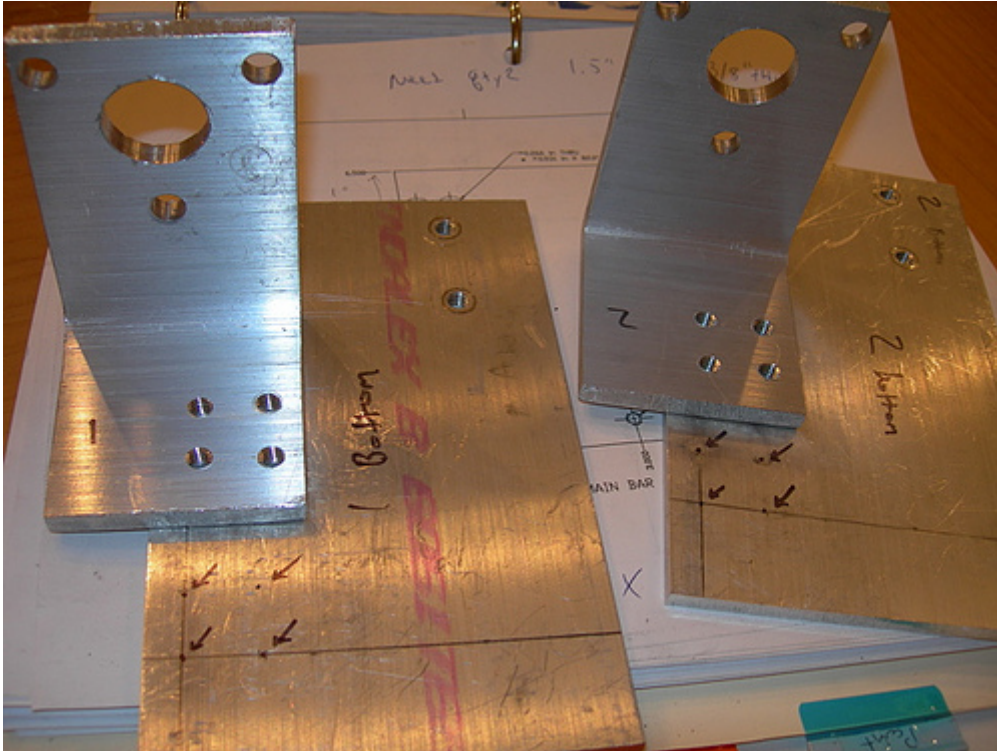
Next, I glued down little squares of PVC. The squares on top have rectangles that extend above them. They are fixed behind the top door frame. The bottom squares will have similar rectangles on them too, but those rectangles will pivot on a nail. That way the doors can lock and unlock from behind, by reaching underneath and pivoting them. The doors then slide out from the bottom.

There are also a couple of small strips on the diagonal sides, to help center the doors left-to-right. All Mike's idea.



I wrapped up tonight's work by marking the main bar for drilling, where the motor mounts will be held in with screws. Hopefully I'll drill those tomorrow, and then all the cutting and drilling on the drivetrain will be done! Unless I find a

problem, that is.



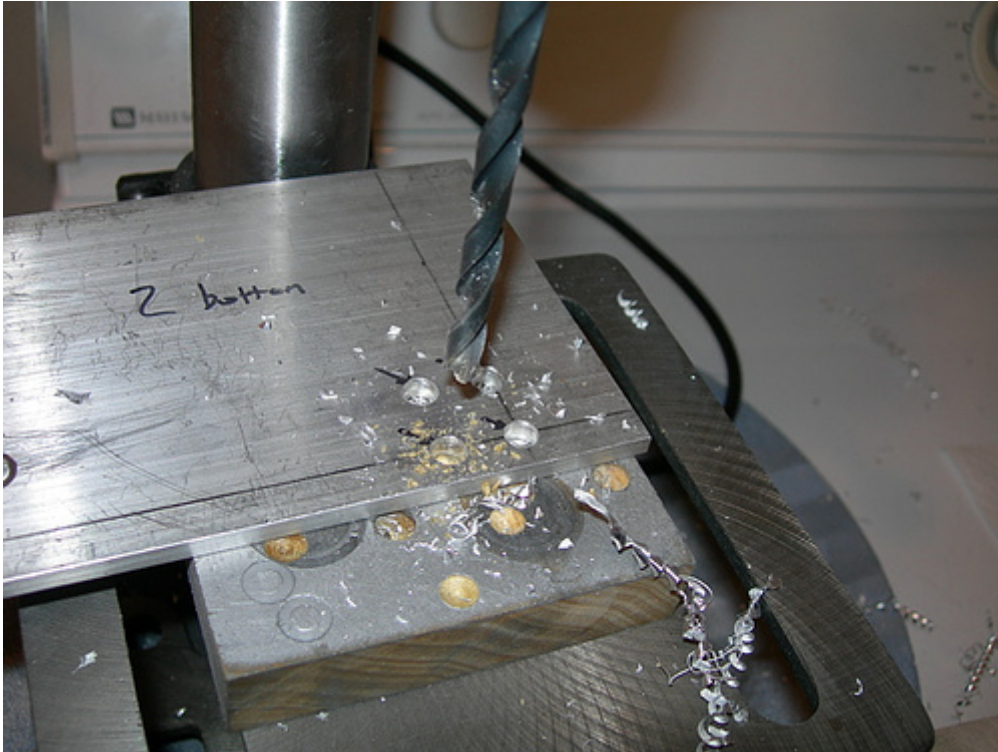
*posted by Victor Franco at 10:44 PM* 0 COMMENTS

TUESDAY, MARCH 27, 2007

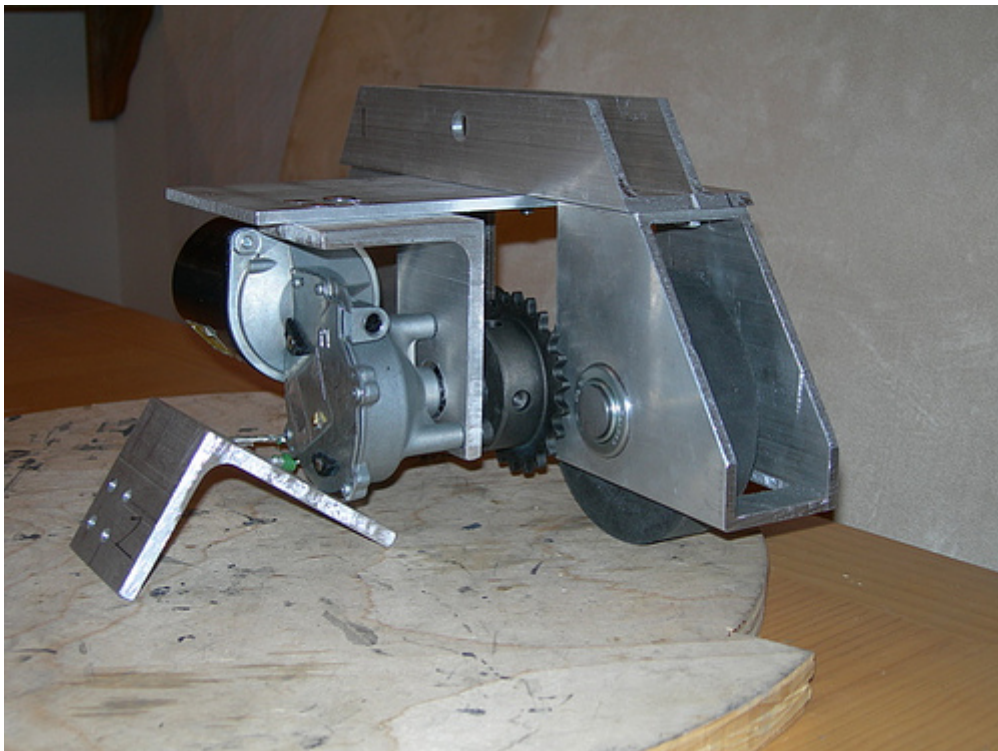
## Drilled Holes for Motor Mounts, Prepped Foot Strips, Finished Door Holders, Attached Door Details

Tonight I drilled the holes in the main bar of the drivetrain to attach the motor mounts. Four holes on each main bar, 0.266" in diameter and countersunk.





The drivetrain is getting closer. I still need to file some flat spots on the axles for set screws on the gears and wheels, and I need to hack on the shaft adapters a little bit to get them to fit snugly on the motors. Then the shaft adapters need to be pinned to the shafts. And the chain needs to be attached, of course.



I also cleaned the aluminum strips that go on the front and back of each of the feet. Here's a tip: If parts arrive taped together, do yourself a favor and don't wait a year or more to take the tape off.



Next, I finished installing the foot shell doors by nailing in small strips of PVC onto each of the bottom door holders.



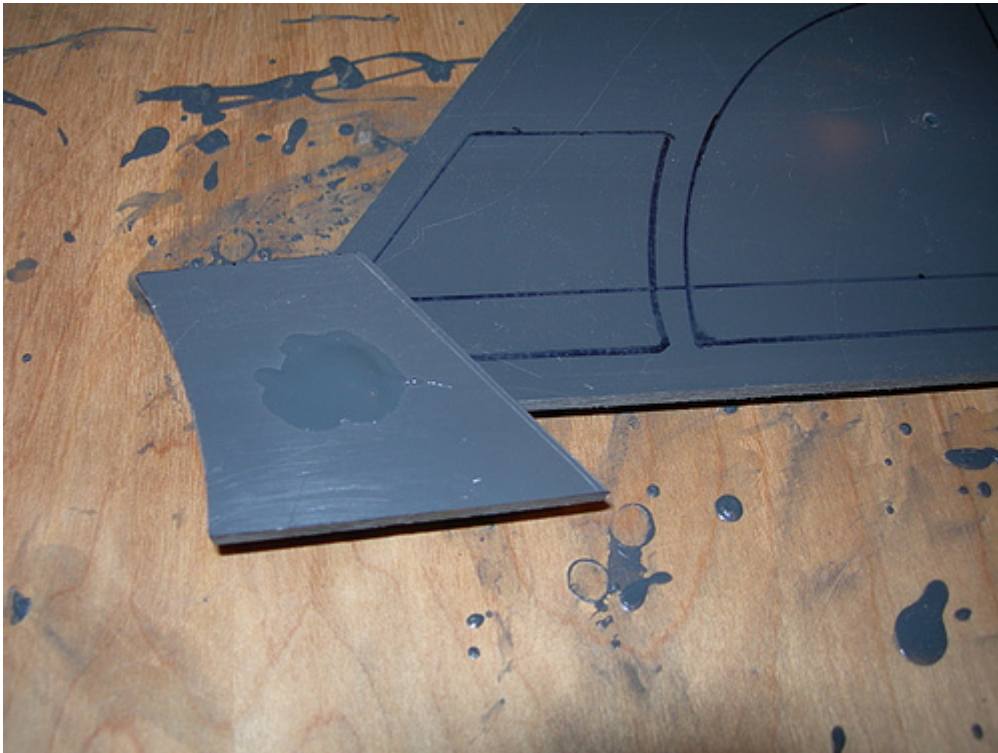


Now all I need to do when I want the doors to come off is pivot the strips of PVC.



After gagging on acetone fumes earlier, I was ready to gag on PVC glue fumes. I glued down the various details that go on the doors of the outer foot shells.





And that was a wrap for this evening.



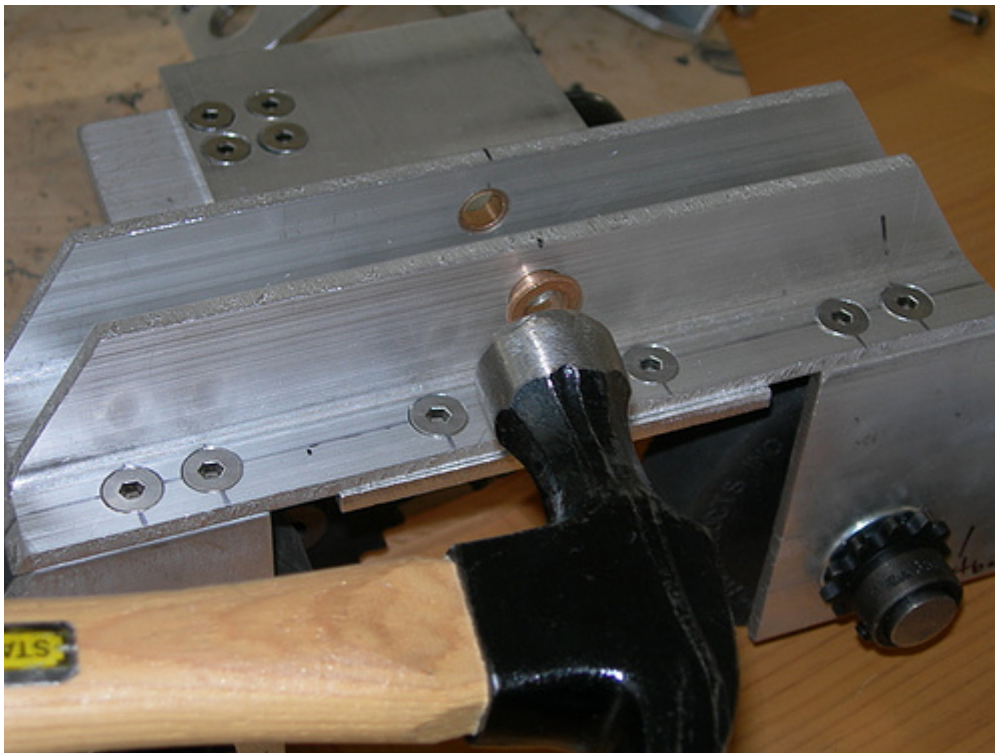
*posted by Victor Franco at 11:50 PM* 0 COMMENTS

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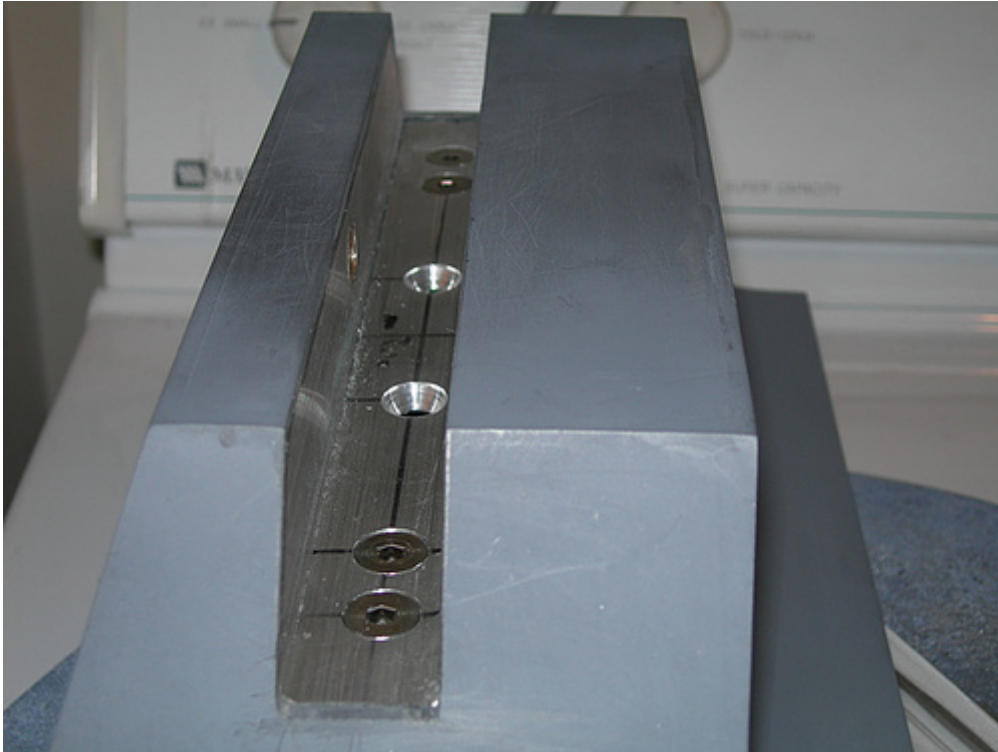
WEDNESDAY, MARCH 28, 2007

## Installed Drivetrain Bushings, Filed Foot Shell Channels to Match Drivetrain Depth, Dremeled Drivetrain

Some bushings that I ordered from McMaster-Carr arrived today. These are the 1/2" -> 3/8" reducers that I need for the ankle bolts. I lightly tapped them in with a hammer, and now they have a nice, snug fit.



Next, I filed the bottom of the channel slots in the outer PVC foot shells to match the depth of the drivetrain. When I first filed these down, I intentionally left a little bit of slop on them, until the drivetrain was ready. Tonight I finished the job.



I found that I will need to widen the channel gap on the right foot shell about 1/16". The tip of the ankle isn't quite fitting through.

I also had to hack on the drivetrain itself tonight with the Dremel. The door frames slightly touched the drivetrain from the inside, so I removed a small amount of material to resolve that.





*posted by Victor Franco at 10:41 PM* 1 COMMENTS

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THURSDAY, MARCH 29, 2007

## Worked on Center Foot

Not a whole lot of progress tonight.

I am deviating slightly from the original design of the center foot. I'm going to sink the sides that form the channel into the the base, rather than use supports. This allows me to stack two layers of 1/2" plywood above the casters without having the foot wind up being too tall.

First I made a couple of parallel dado cuts, 1/4" deep and 1" apart.



Then I trimmed the base to size. At least I hope I did, I'm a little worried I may have overdone it on the trim, but I'm still working on fitting it into the shell.



I also widened the channel gap in the right foot shell, so the tip of the ankle can

fit through now.

Like I said, not much progress.

*posted by Victor Franco at 10:20 PM* 0 COMMENTS

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FRIDAY, MARCH 30, 2007

## More Center Foot Work, Started Working on Drivetrain Chain

Tonight I continued where I left off on the center foot.

I trimmed the channel sides a little lower.



I started working on the layer that the casters will attach to.





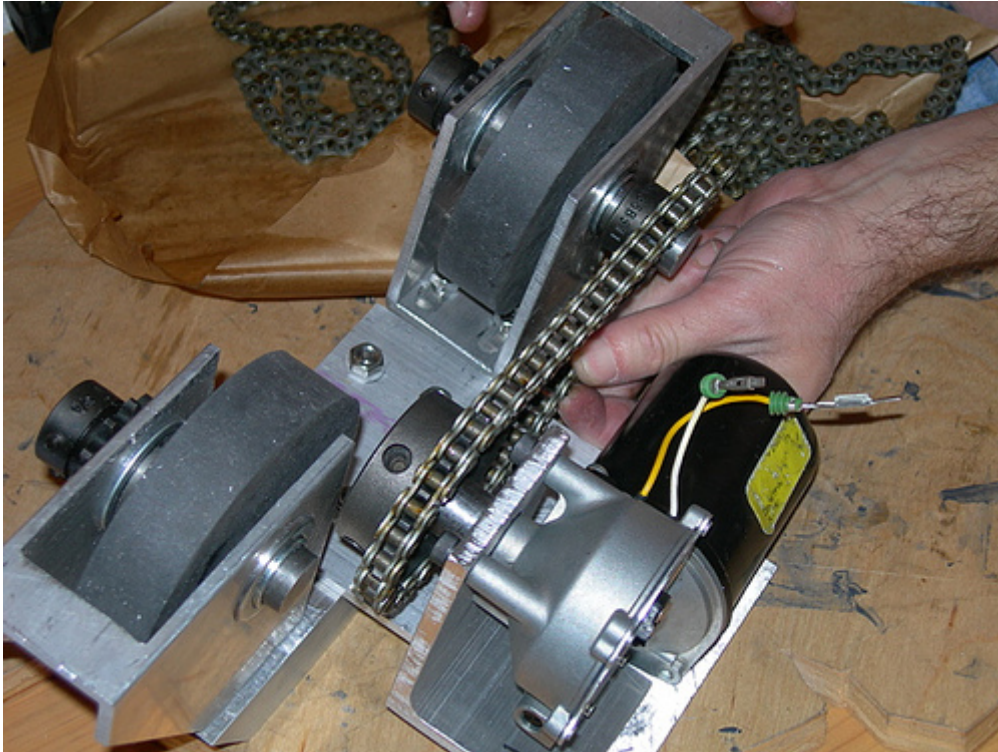
I cut a pair of 1/2" pieces of plywood to size, and glued them together. These will be trimmed to match the angled profile of the foot shell.





Finally, I wrapped up with an attempt to separate the chain so that I can get pieces of the correct length. My chain tool turned out to be a piece of junk, so all I did was make an oily mess. I found a better chain tool in my bag of tricks, so I may be able to continue working on this without having to go out and buy one.





Saturday: The California Science Center Star Wars exhibit, featuring... R2 Builders!

*posted by Victor Franco at 11:42 PM* 0 COMMENTS

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SATURDAY, MARCH 31, 2007

## California Science Center

Today was R2 Builders day at the California Science Center, which is currently hosting the "Star Wars: Where Science Meets Imagination" exhibit.

As usual, Mike's R2 was the star of the show, making the rounds and regaling the crowd.



Mike gave a talk about R2 building and the R2 Builders Club. He talked about his R2 on stage, and showed various parts (including my drivetrain). William Miyamoto and Guy Vardaman also said a few words.





There we also the cool props at the exhibit, including Luke's landspeeder, the rebel blockade runner Tantive IV, and the Jawa's sandcrawler, among many, many more.







And of course, a Lucasfilm R2-D2 prop was there.



Afterward, we visited one of the R2 mailboxes and took some pictures. All in all, a fun day!



*posted by Victor Franco at 11:23 PM* 0 COMMENTS

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SUNDAY, APRIL 01, 2007

## Finished Cutting Center Foot, Primer for Half Moons, Filed Shafts, Attached Foot Strips

Unlike [last year](#), I didn't have an April Fools joke for this year.

It was a busy day, but still not enough hours to do all that needs doing.

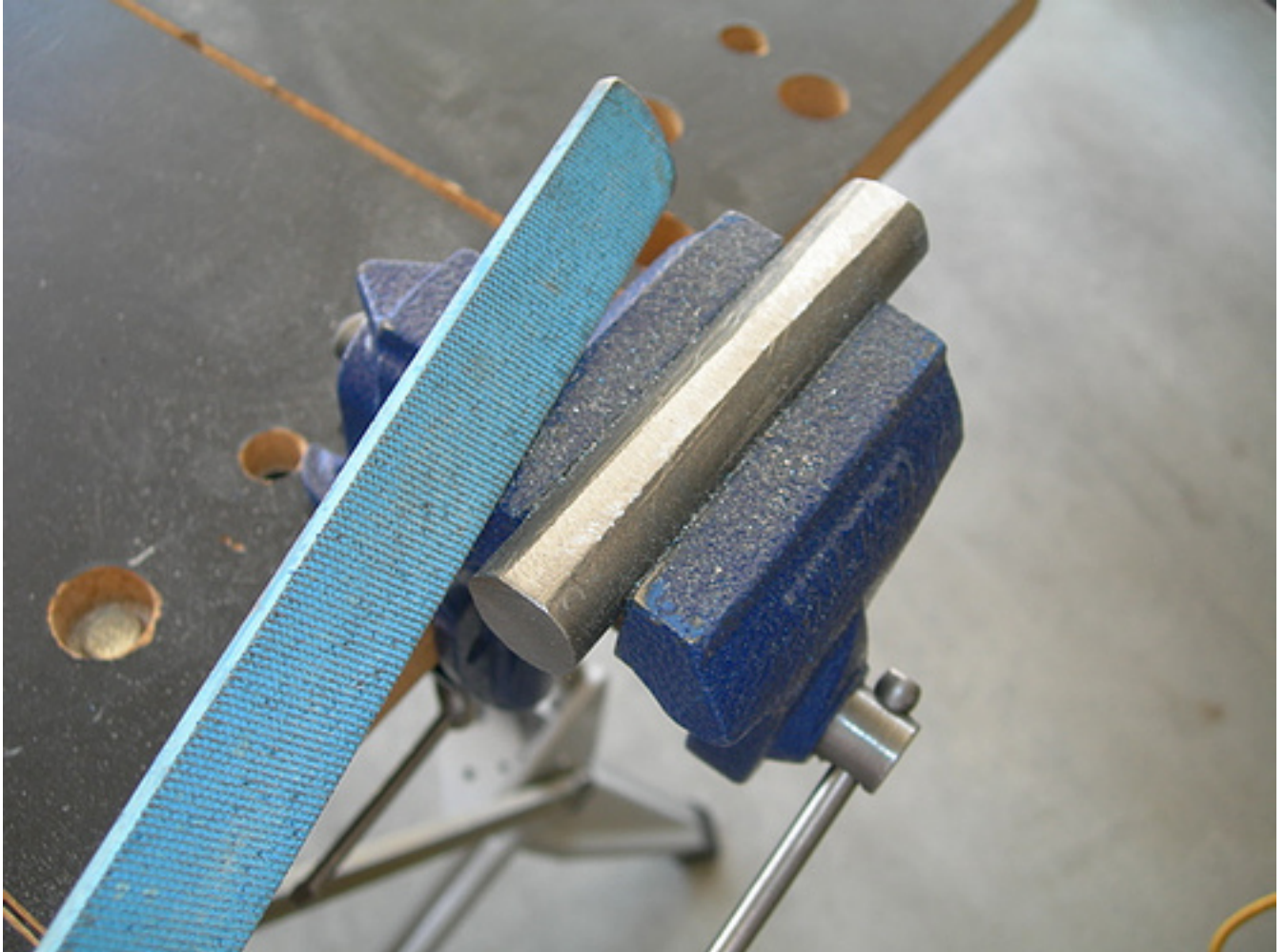
I started off by finishing the wood cuts on the center foot. I found that I needed another 1/2" of plywood to make everything work. I also have the casters sticking out further than half way from the bottom of the foot. I'm not sure if that may present any problems, but I don't think so.

I had to glue up that last 1/2" of plywood, so I hope to screw and bolt everything together once the glue dries.





Next, I turned to the enjoyable task of filing steel. Four axles and three shaft adapters need two flat spots each, to accommodate the set screws for the gears and wheels.



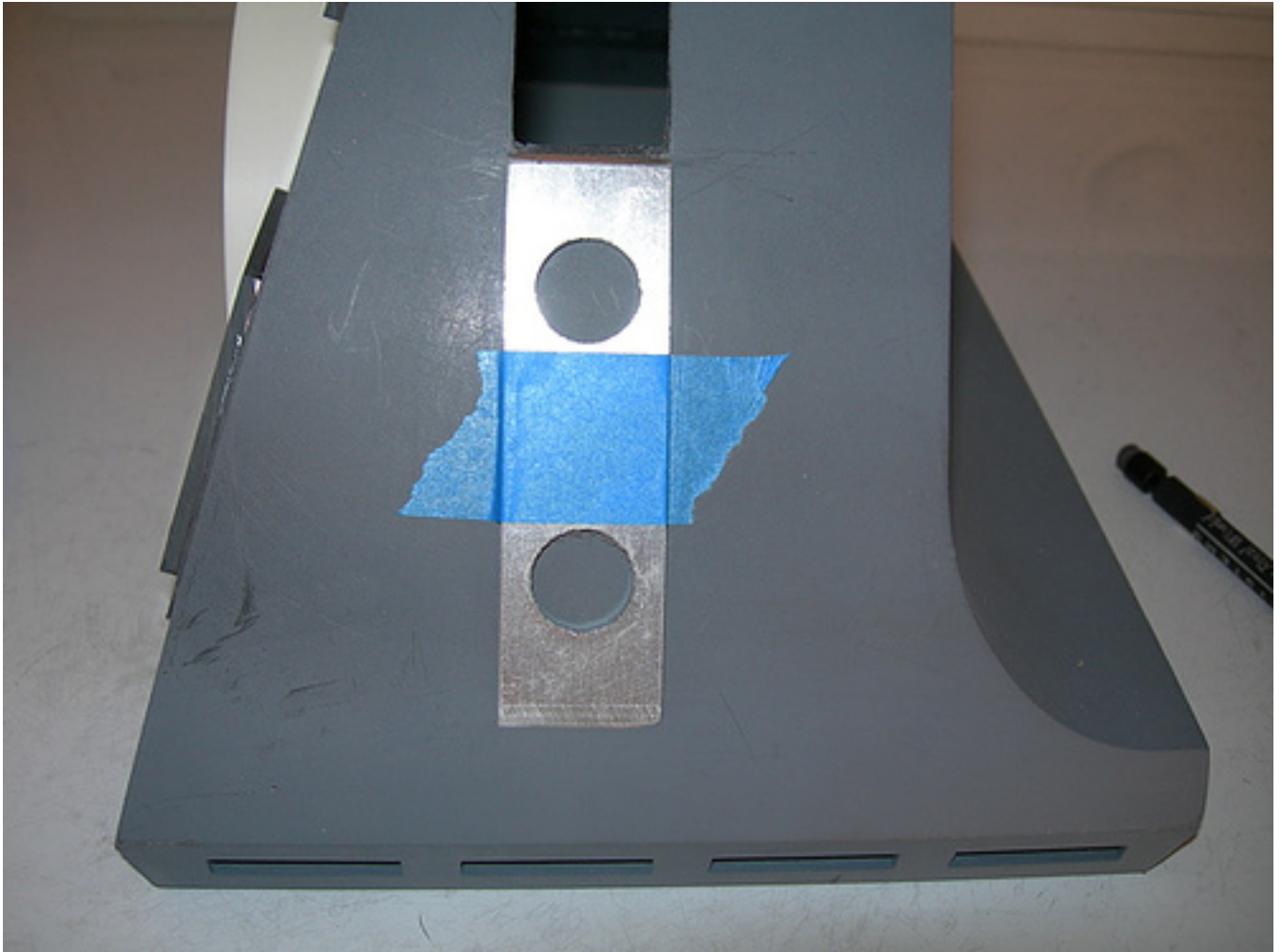
I applied primer to the half moons today. I was also going to prime the foot shell doors, but I didn't get around to it. All I did for those was rough them up with sand paper.



I wrapped up by installing the foot strips on all the feet.

For the front strips on the outer feet, I taped each foot strip in place and traced the circles for the knurled cable fittings with a pencil, to indicate where to drill.

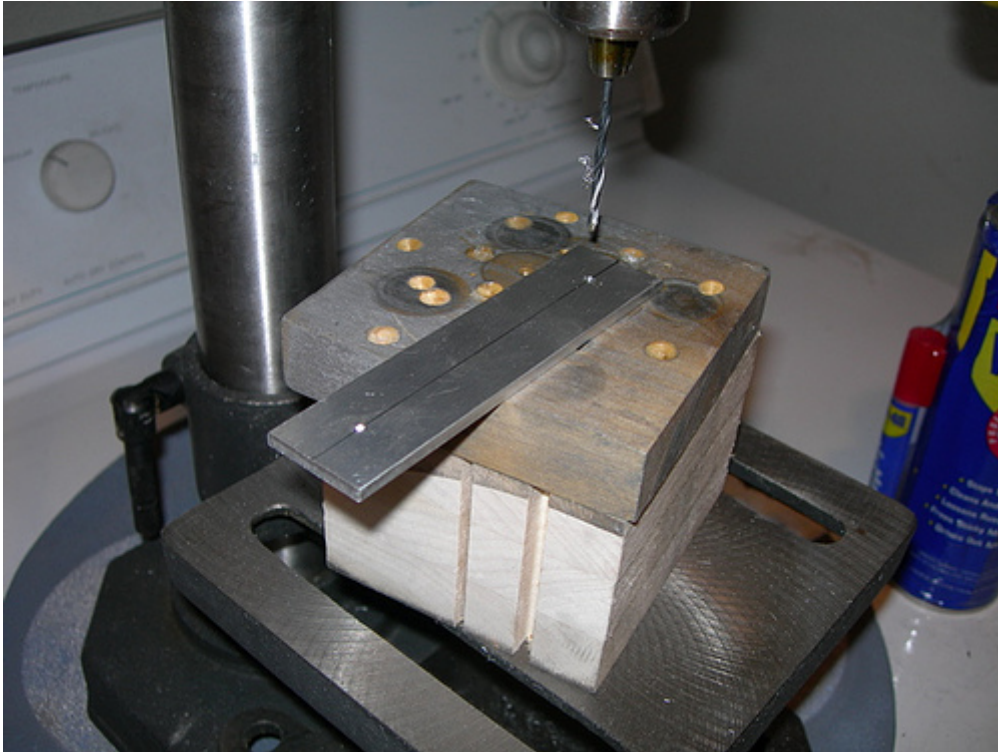




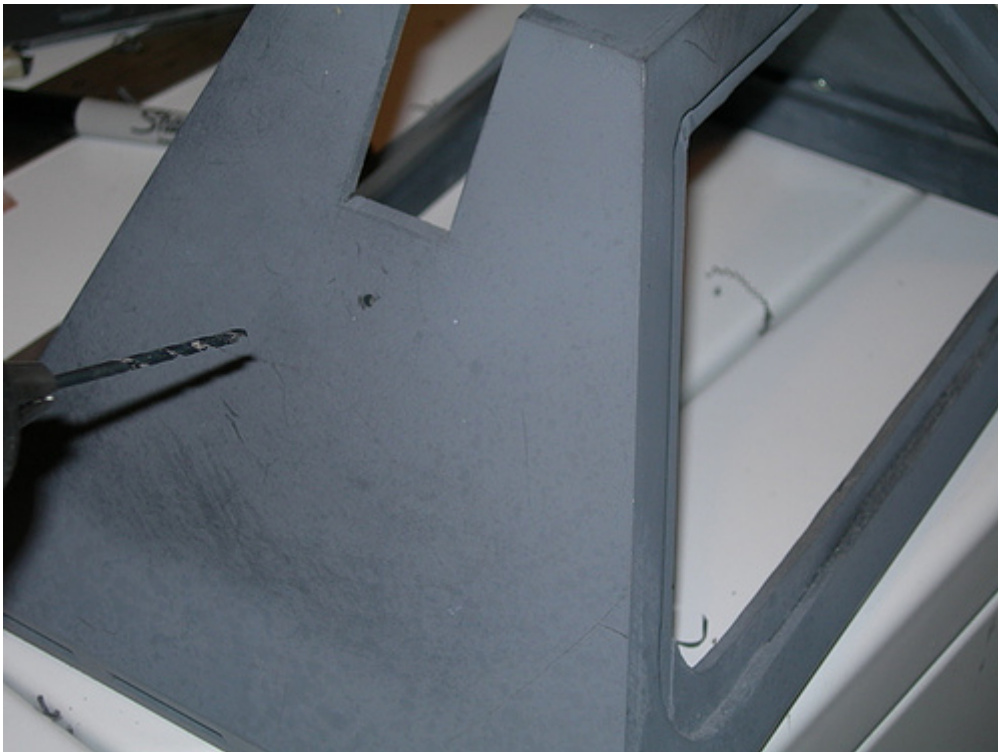
I used a 5/8" Forstner bit to cut out the circles.



For the foot strips on the backs of the outer feet, and for both foot strips on the center foot, I drilled and tapped holes for #4-40, 3/8" machine screws. Those foot strips are screwed in from the inside.



I likewise drilled the foot shells, but I let the screw itself do the tapping into the PVC.



One step closer.





*posted by Victor Franco at 11:50 PM* 0 COMMENTS

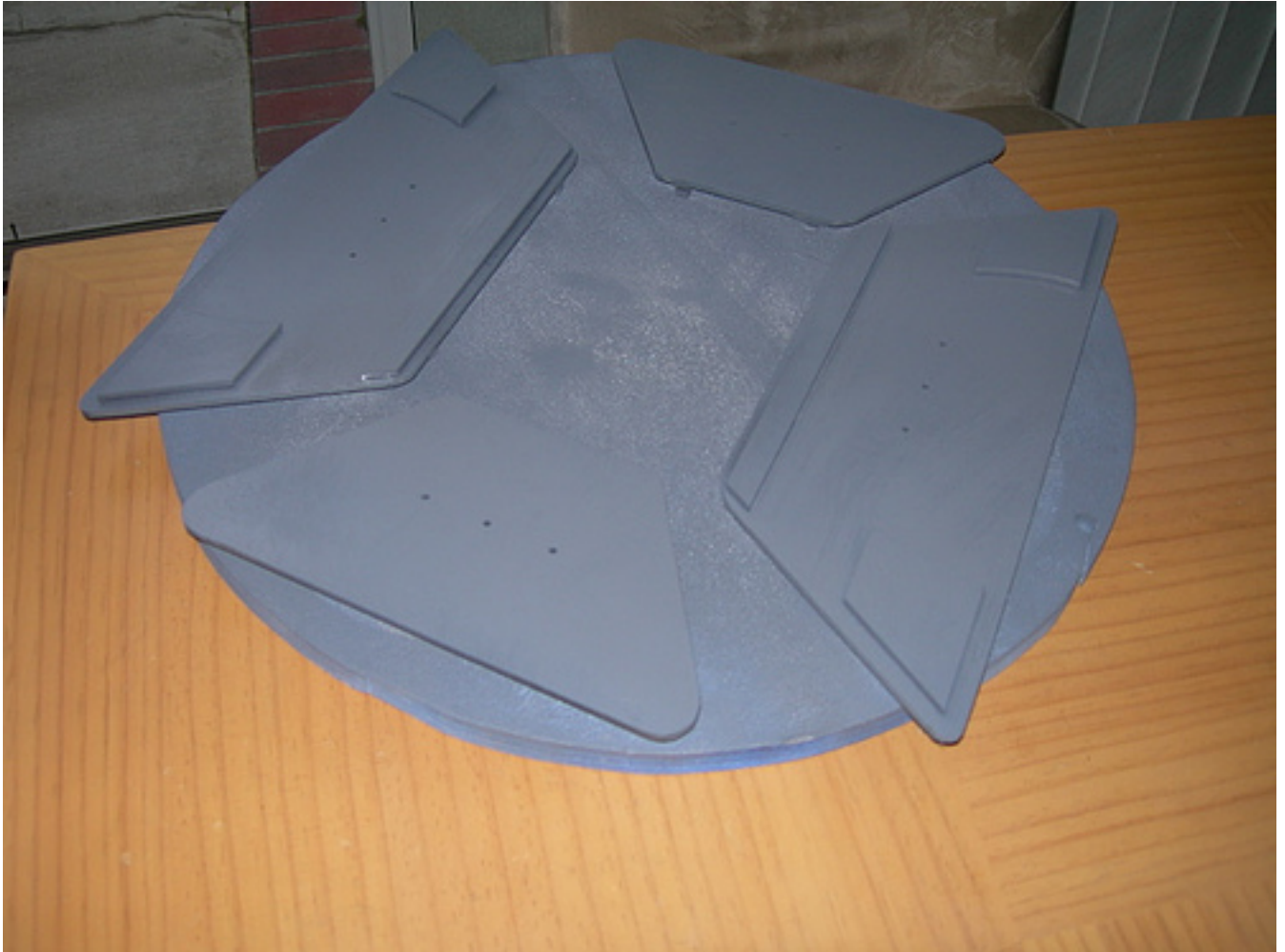
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MONDAY, APRIL 02, 2007

## Primer for Foot Shell Doors, Finished Cutting Battery Box Doors, Continued Center Foot Assembly

The march forward continues.

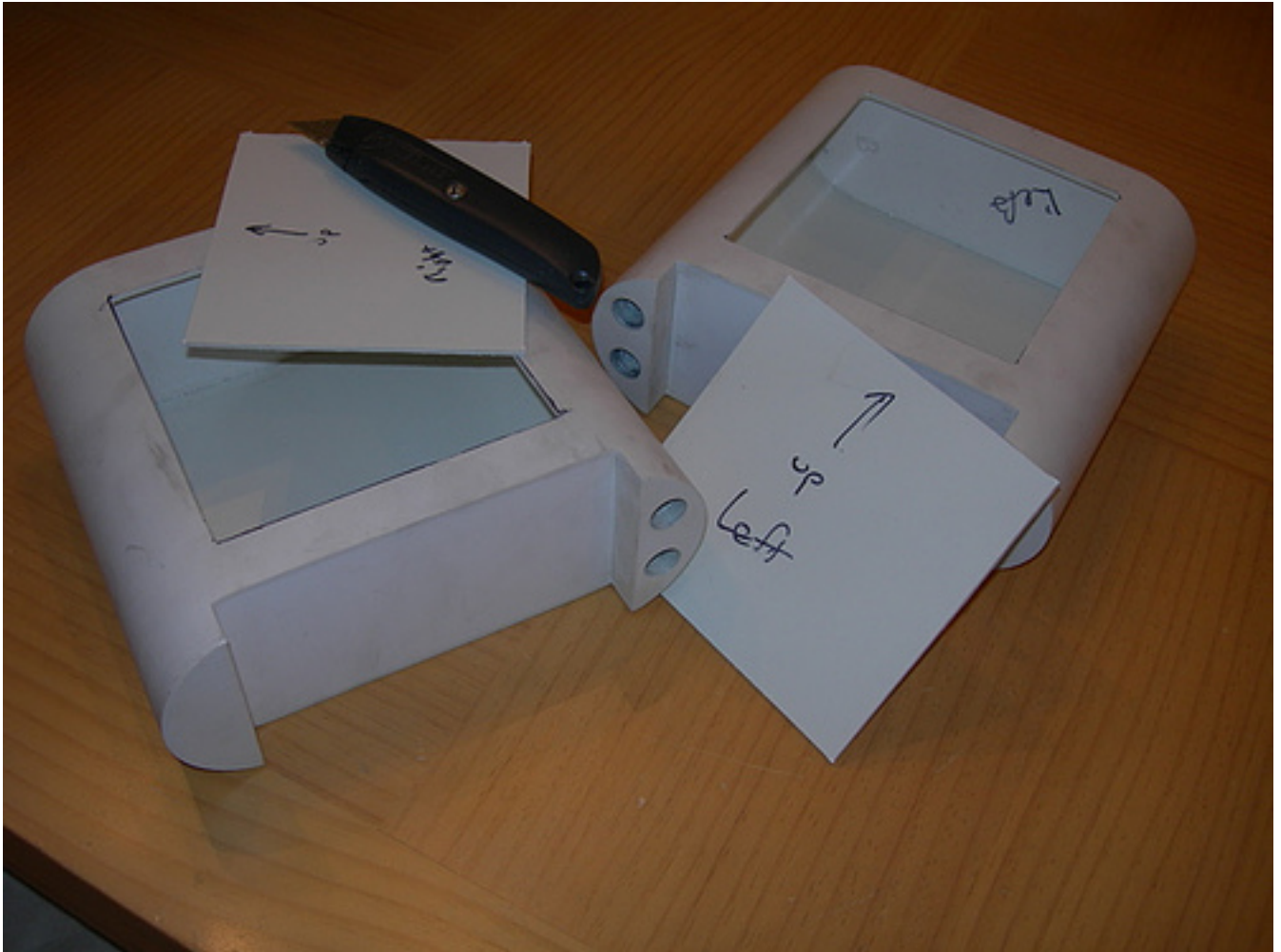
This morning I applied primer to the foot shell doors, and glued together the wooden channel for the center foot.





In the evening I finished cutting the access doors on the battery boxes that Mike started a couple of weeks ago. I will place small pieces of PVC on the inside behind each corner, and then screw the doors back on.





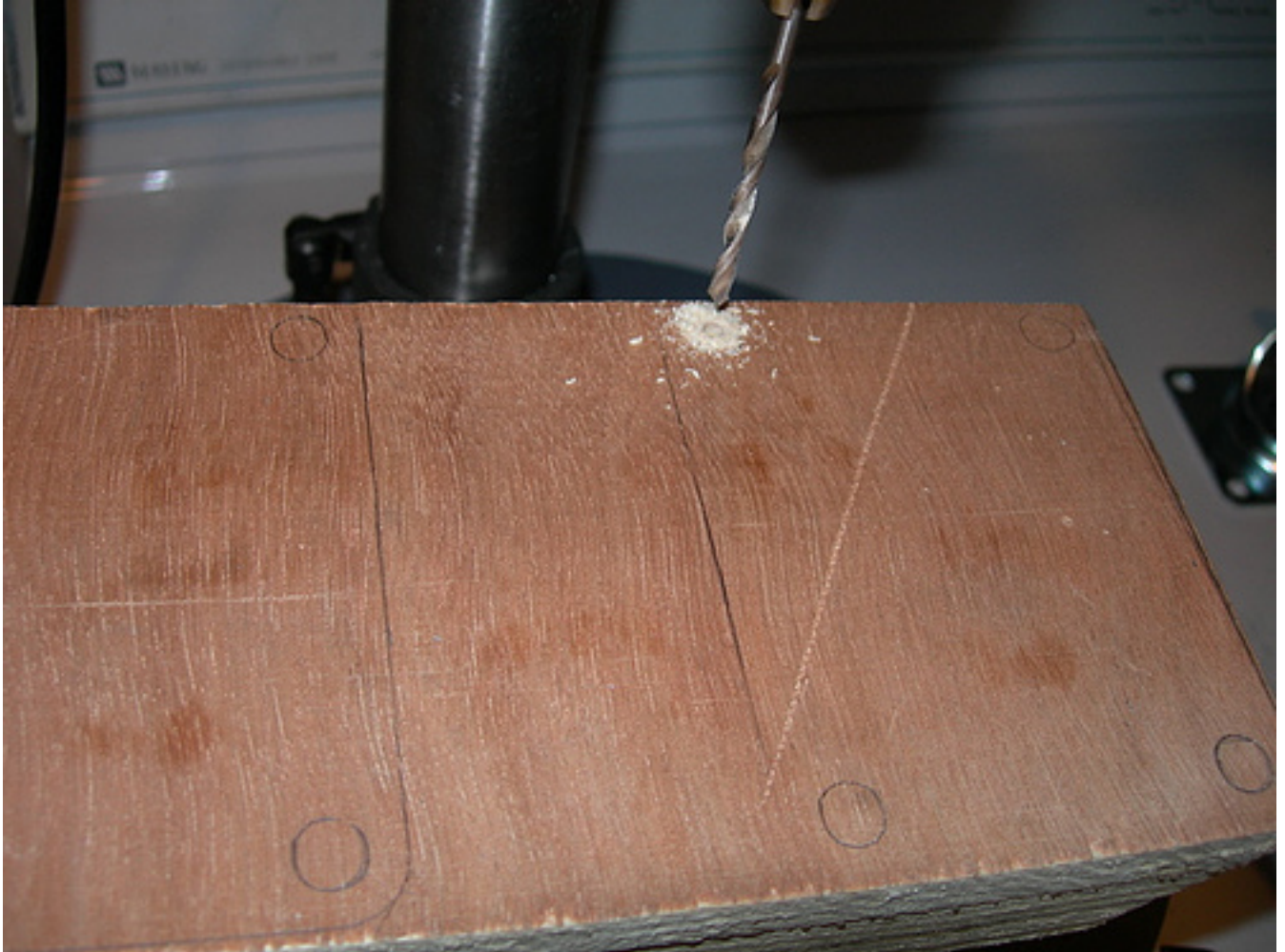
Once the glue had dried sufficiently, in the evening I drilled eight holes along the sides of the center foot channel and sunk 2" screws into the foot assembly to hold it all together.





Then I flipped the assembly over and drilled the straight holes for the casters. The outside holes will need to be drilled at an angle.





I bolted down the inside corners of the casters. Again, I hope those wheels aren't sticking too far out. I *think* they are okay.



*posted by Victor Franco at 11:54 PM* 0 COMMENTS

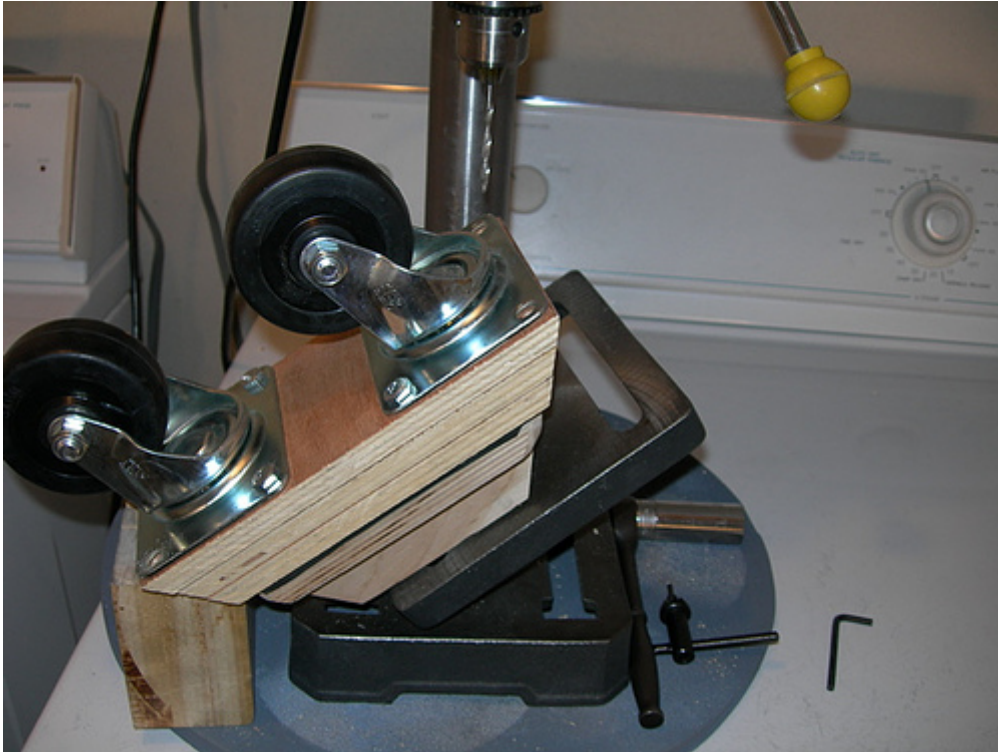
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TUESDAY, APRIL 03, 2007

## **Center Foot Setback, Installed Battery Box Door Holders**

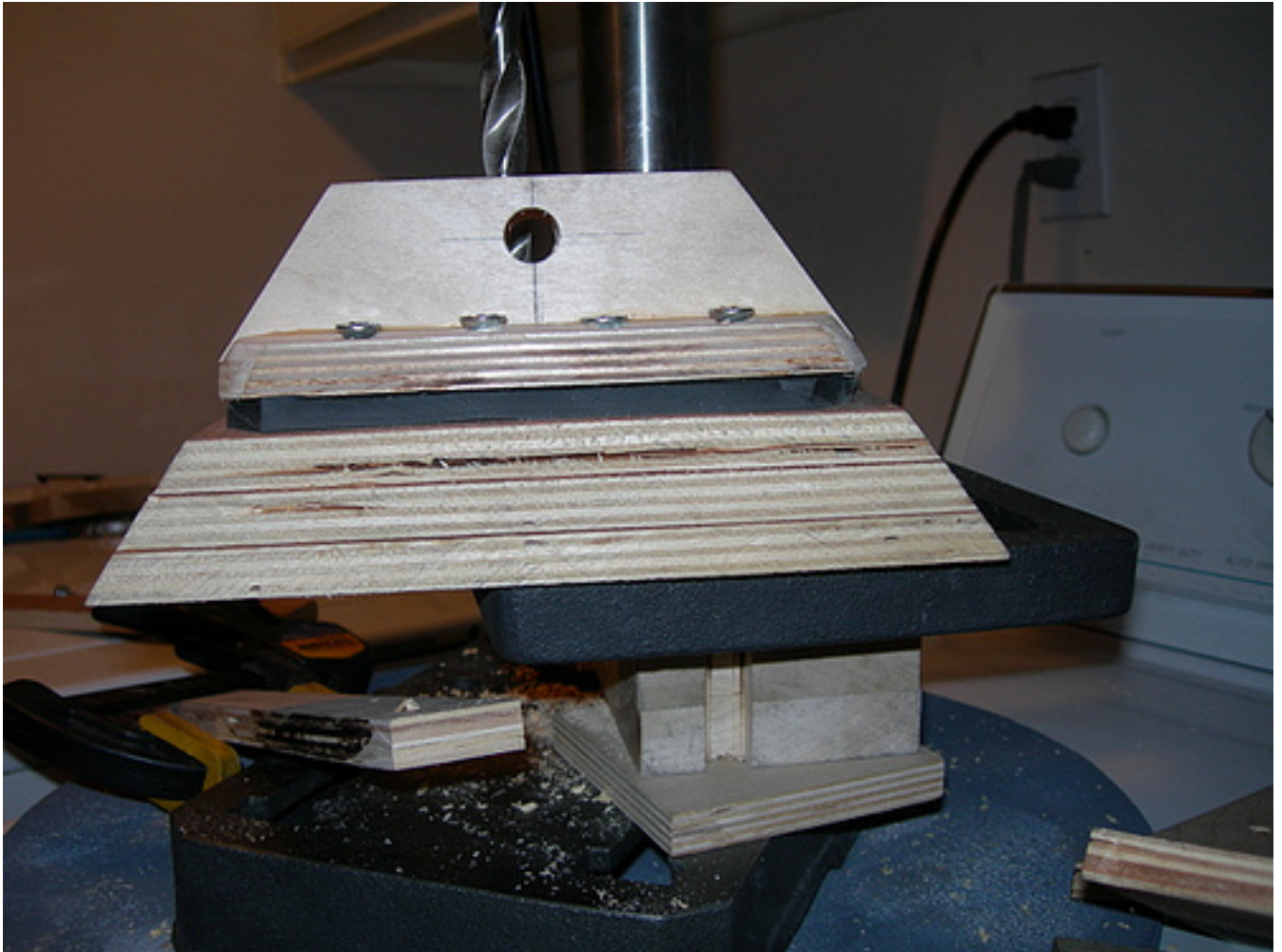
I had been waiting for today for quite a while, but it ended in sadness.

Today was the day I planned to install my center foot. I drilled the remaining holes for the outer caster bolts.



Then I drilled the ankle bolt hole.





And then I tried fitting the center foot on the leg.



There are at least two problems with the center foot. First, it is too tall, as I feared it might be. Second, apparently I drilled my ankle hole too low, because the front wheel is barely touching the ground. The rounded part of the bottom of the center leg is forcing the foot to do a wheelie.

I will probably have to rebuild the whole thing from scratch, for the third time. That is why I am sad.

I did manage to get something right, I installed the door holders on the battery boxes. Once the PVC glue dries, I'll place the doors back on and drill holes through the door corners and the holders, and then install the screws that will hold the doors on.



*posted by Victor Franco at 11:16 PM* 5 COMMENTS

## Two Years Ago Today...

Today is the two-year anniversary of [my meeting Mike's R2 for the first time](#) ever at Walmart in Anaheim. I was hoping to have my R2 done by this date, but it's not quite there yet.

Just seeing that grungy Quicksilver shirt on the hanger brings back good memories. :)





*posted by Victor Franco at 12:26 AM* 0 COMMENTS

WEDNESDAY, APRIL 04, 2007

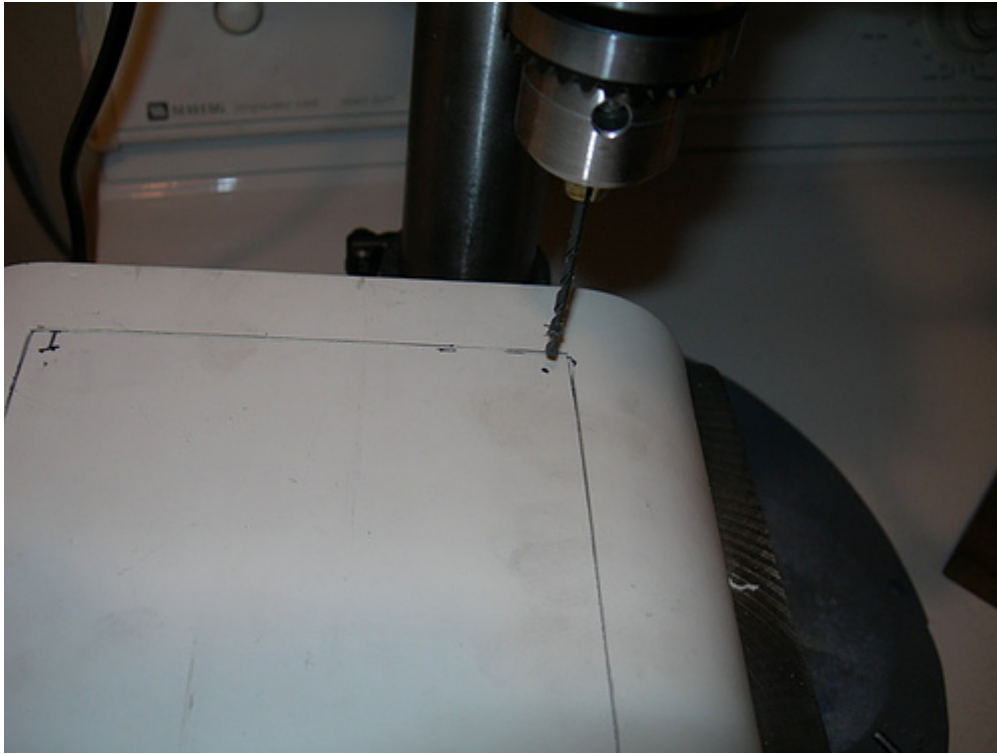
## Finished Battery Box Door Holders, Hacked on Chain

Ah, sweet pity, where would I be without you?

Matthew Henricks and Mike Senna have kindly offered to help with the center

foot; Matthew can help with the plywood, and Mike will help make sure that attempt #3 is correct.

In the meantime, I finished the battery box door holders. First, I reattached the battery box doors, and drilled four holes in the corners of each, using a drill bit just slightly smaller than a #4 screw. The hole goes through both the door and the holder underneath the door.



Then I re-drilled the door only, with a 0.113" drill bit, just slightly larger than a #4 screw. After that, I countersunk the four holes in each door.



Then I inserted the #4 screw. The screw self-taps into the PVC holder. Things are looking good, the doors hold right in place.





I tried working on the chain again with my chain unlinking tool, but all I managed to do was pop the pin half way out, and otherwise mangle the link. I'll tell you one thing, I have no fear of the chain breaking when R2 is driving around. I guess I'll try the Dremel next.



*posted by Victor Franco at 10:20 PM* 0 COMMENTS

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THURSDAY, APRIL 05, 2007

## Started Marking Foot Shells for Drivetrain Cuts

I barely got anything done today. All I did was start the process of marking the inboard side of the foot shells for the cuts that need to be made to accommodate the drivetrain, and I didn't even get very far with that. :/

*posted by Victor Franco at 10:54 PM* 2 COMMENTS

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FRIDAY, APRIL 06, 2007

## Cut Frame for Dome Drive

One last cut on the frame (or so I think).

This time it was for the axle to the wheel that will spin the Rockler bearing, on top of which the dome sits. The frame does not quite allow the axle to get close enough to the Rockler bearing for the scooter wheel to touch it, so I placed the wheel on top of the frame where it touches the Rockler bearing, and traced the hole.

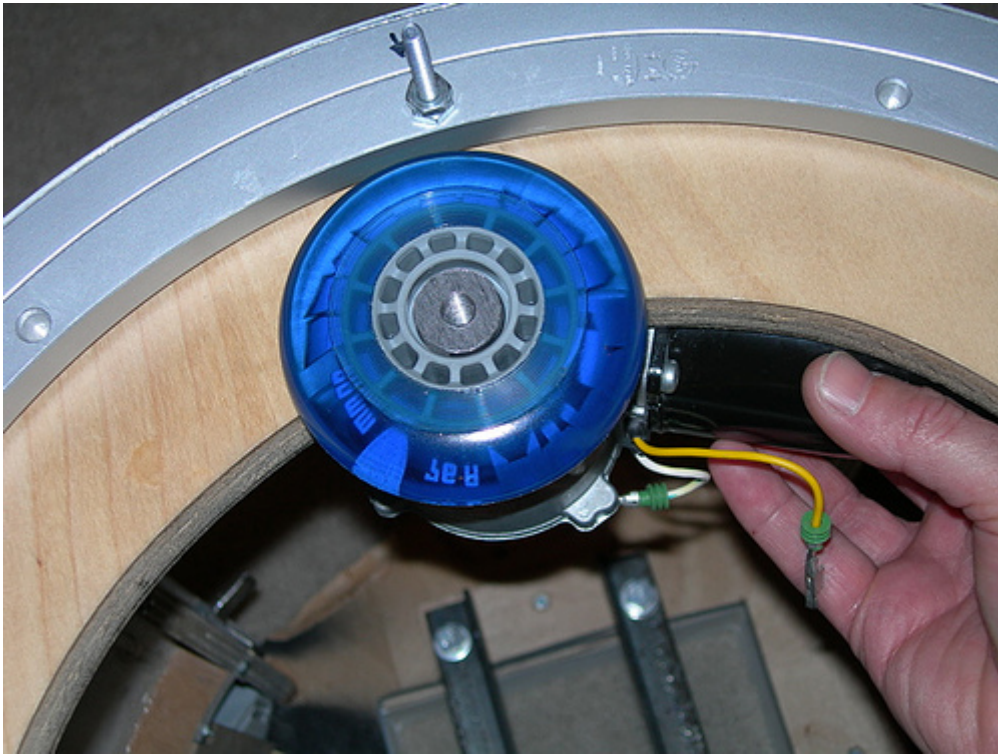


I used the jigsaw to rough-cut the hole, followed by the Dremel drum sander to smooth it out. Roy Powers dropped by and gave me a hand with this, while afterward we discussed center foot issues.





Now, when the Saturn windshield wiper motor hangs from underneath the frame, the axle will be able to pass through the hole, and allow the wheel to spin the dome.



*posted by Victor Franco at 11:35 PM* 0 COMMENTS

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SATURDAY, APRIL 07, 2007

## **Recut Center Foot Again, Started Cutting Foot Shells for Drive Train**

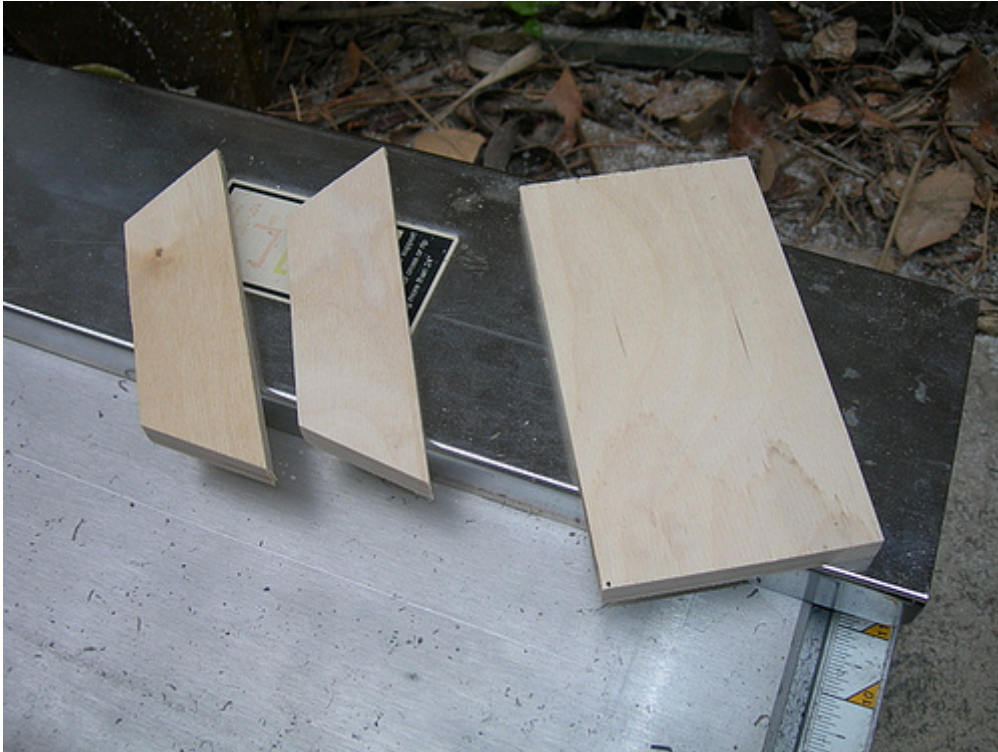
More help from my friends today.

First, Matthew Henricks came through again for me with some more high-quality plywood for the rebuild of the center foot. Thank you again Matthew!

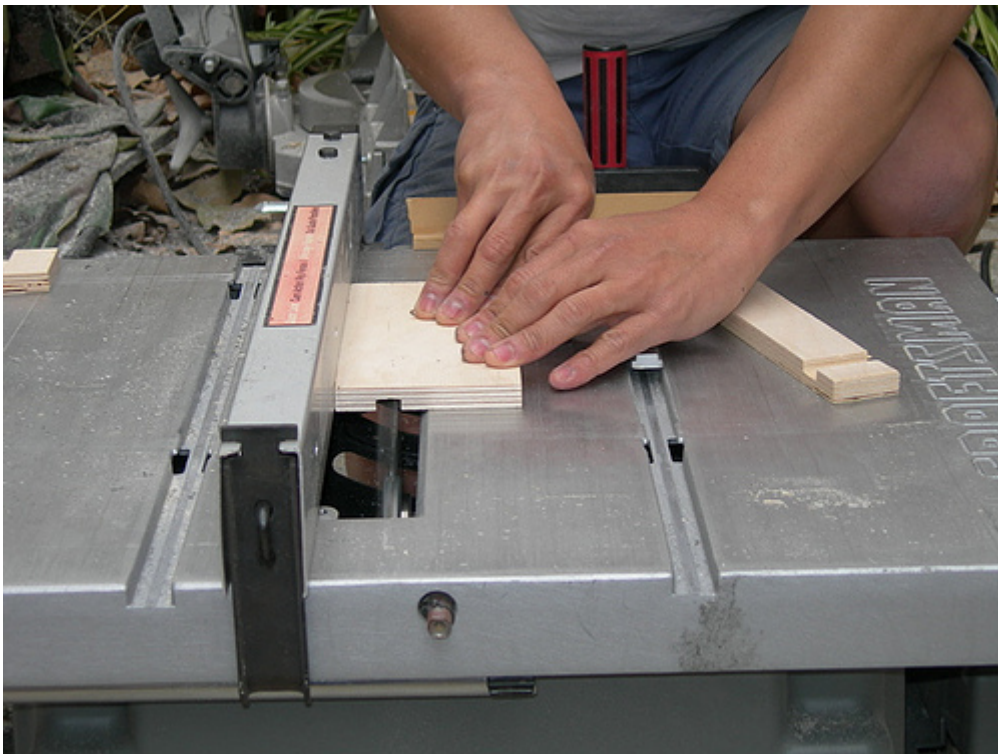
Mike helped for the three millionth time, this time with the rebuild of the center foot, and the start of the cuts on the foot shell for the drivetrain. Fortunately, my unintentional buffoonery usually makes Mike laugh, so he's somewhat entertained.

Stop me if you've heard this story before... I cut the basic pieces for the center foot on the table saw and miter saw.





Then Mike did the dado cuts that hold the channel pieces.



Meanwhile, Mike had all of about five minutes to work on his own building activities. He ordered some incomplete battery boxes from Craig, and is finishing



them himself.



While we were waiting for the glue to dry on my center foot, we started cutting into one of the outer foot shells, since the drivetrain will not fit within them. The drivetrain will continue into the battery box. Mike and I both worked on cutting the foot shell.



If I look like I'm going to puke, it's because the thought of accidentally destroying months of work with a bad cut on the Dremel makes me nauseous.



Next, Mike attached the casters. It is a *really* tight fit inside the foot shell, so the casters have to be mounted very precisely.





It's so snug in the foot shell, Mike had to grind off some of the overhang of the caster mount plate. More cool sparks!



As we wrapped up, we started checking to see if we could drill the ankle bolt hole.

Unfortunately, we ran into some trouble. The blueprints call for the ankle bolt hole to be 0.625" from the tip of the ankle, but it really needs to be closer to the tip (say, 0.500") for my 1/8" thick foot shells. So I'm going to have to figure out how to get a bolt into the foot shell without hacking too much of the shell, and verify that the foot will tilt at the 18 degree angle. If it doesn't, then some minor hacking is in store for the center leg. I really hope it doesn't come to that, though.



*posted by Victor Franco at 10:20 PM* 0 COMMENTS

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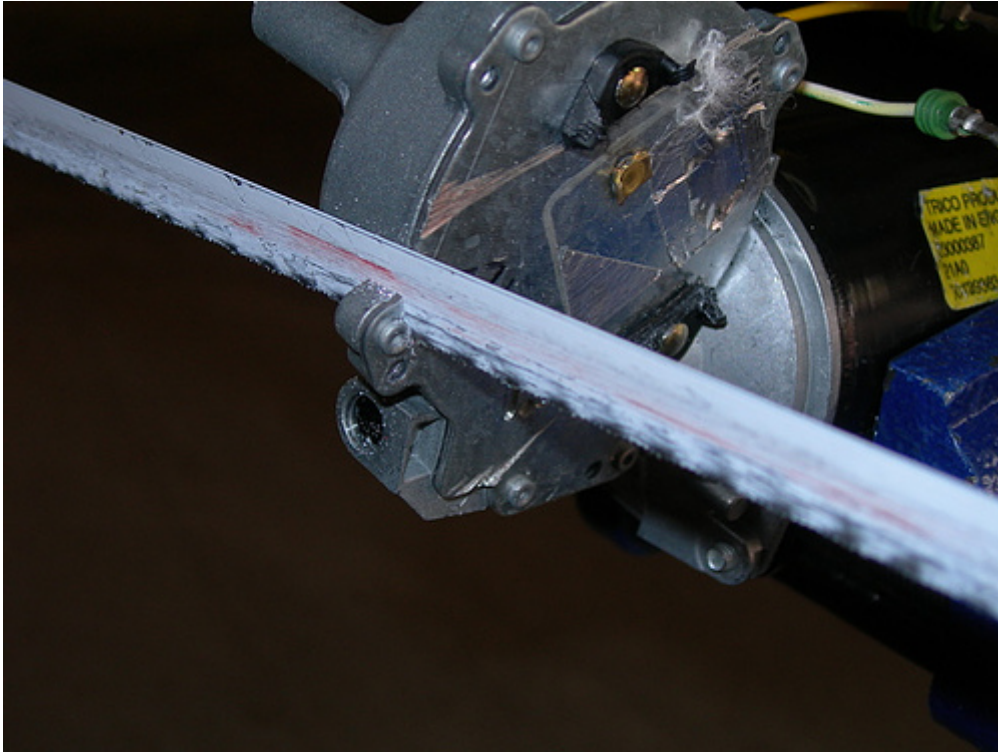
SUNDAY, APRIL 08, 2007

## **Lots of Work on Left Foot**

Today was a long but fairly productive day. I mainly concentrated on the remaining things to be done for the left foot.

First, I had to hack off one of the fasteners on each motor, so that they will fit inside the foot shells and battery boxes.

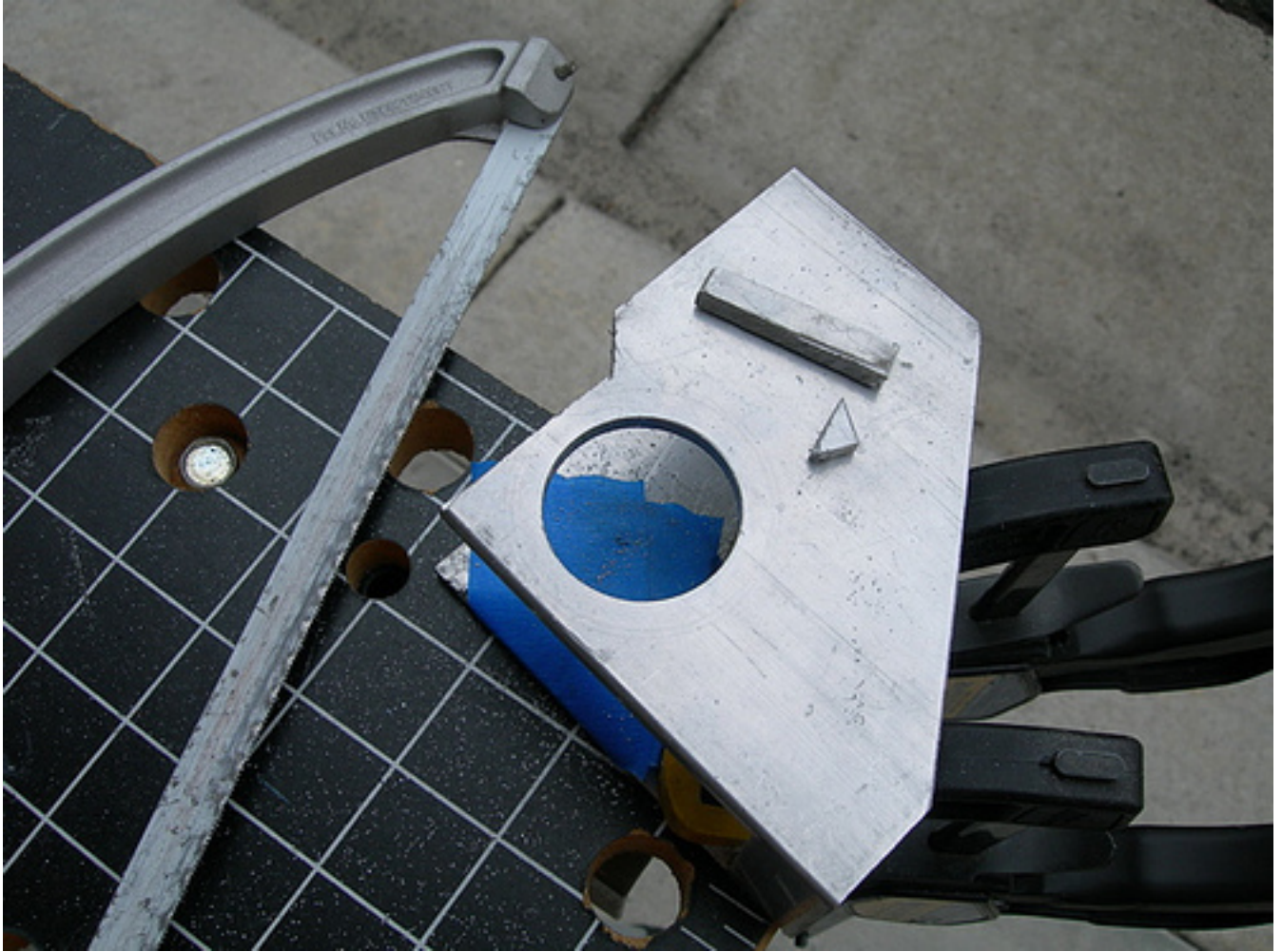




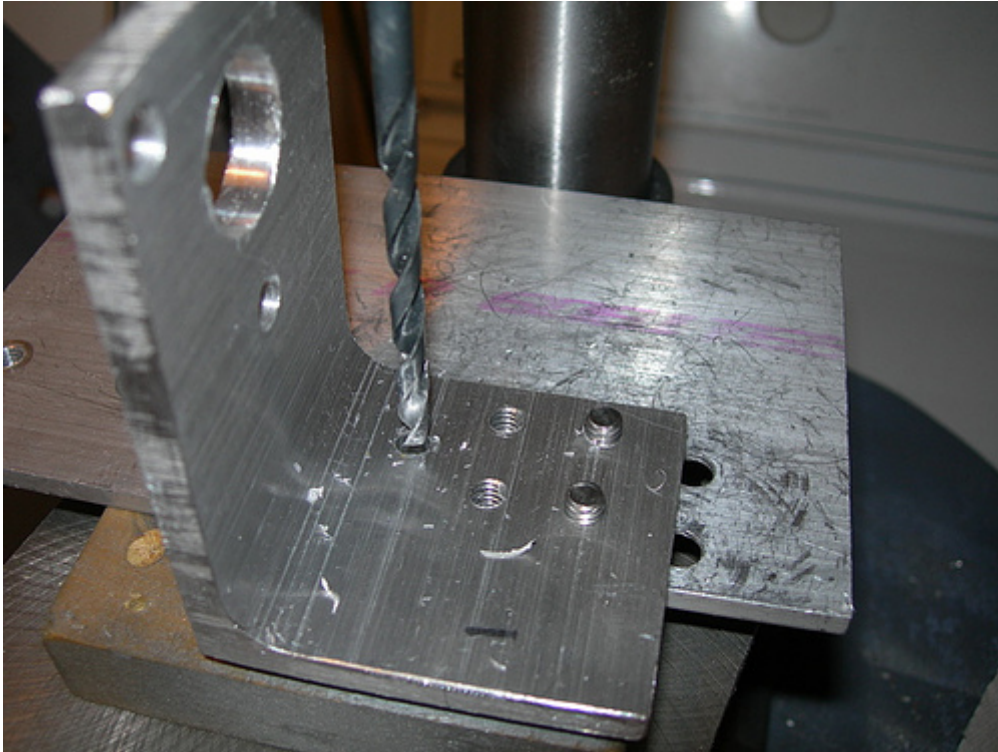
I found that if I followed the H&A drivetrain blueprints exactly, then the motor would collide with the inner part of the edge of the foot shell. I needed to move the motor inside the foot shell, by sliding the motor mount toward the wheels by  $5/16$ ", recycling previous motor mount scREW holes. That necessitated a couple of changes.

First, I had to hack into the front wheel housing, to allow the large, 22 tooth gear some room.





Second, I needed to drill a new hole in the main bar and the motor mount.



While I was working with the motors, I decided to modify one of the shaft adapters, to get it to fit snugly near the base of the motor shaft. With this modification, the shaft adapter screws on very close to the motor, and later I can drill a 1/8" hole through the middle of the shaft, and pin the whole thing with a 1/8" steel pin.

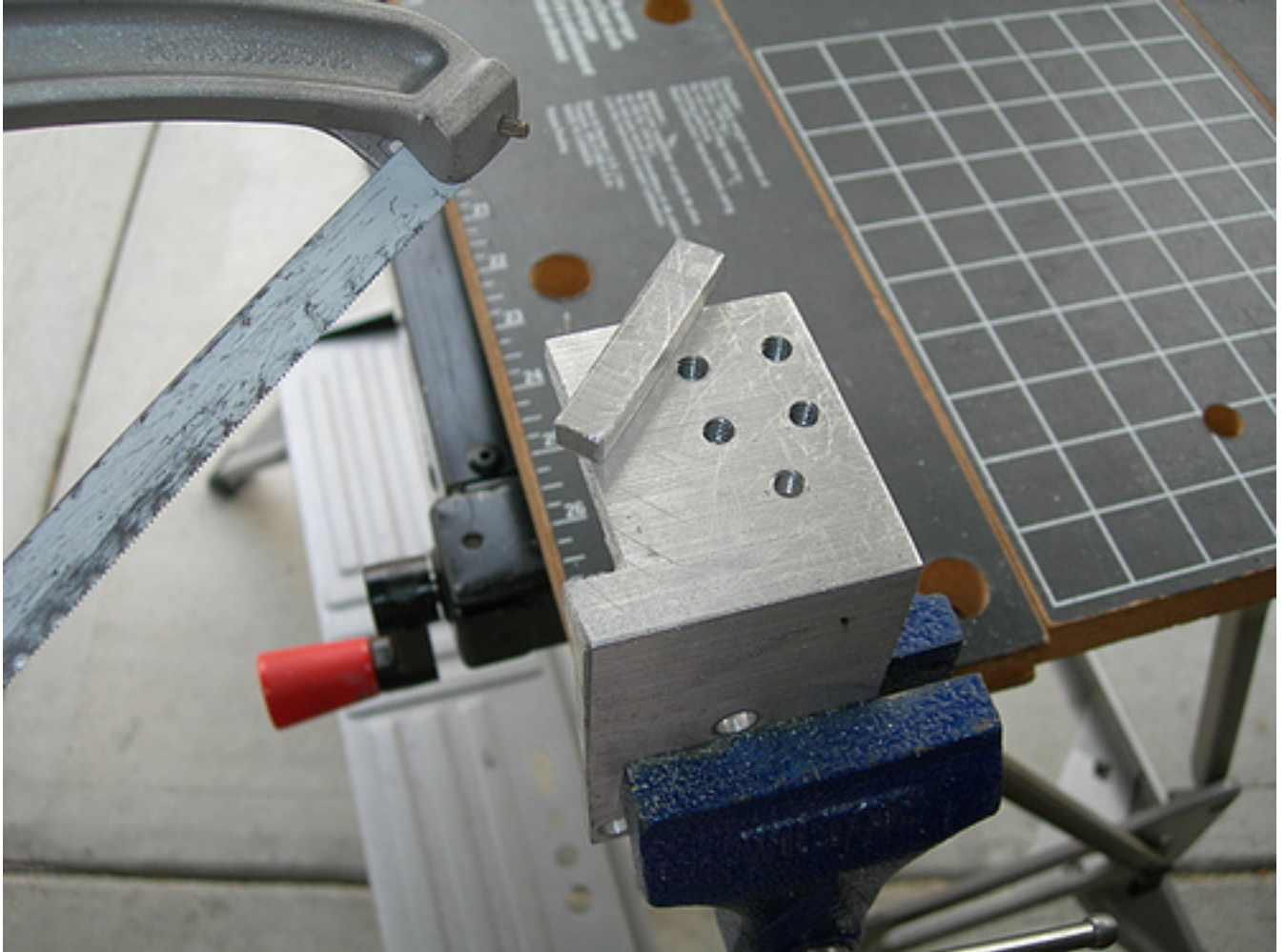


Next, I cut the side of Craig's battery box that faces the foot shell, to allow the motor to enter into it from the foot shell. It feels like I'm vandalizing a piece of art here, but it has to be done.





I needed to trim some material off of the motor mount to get it to fit into the battery box.

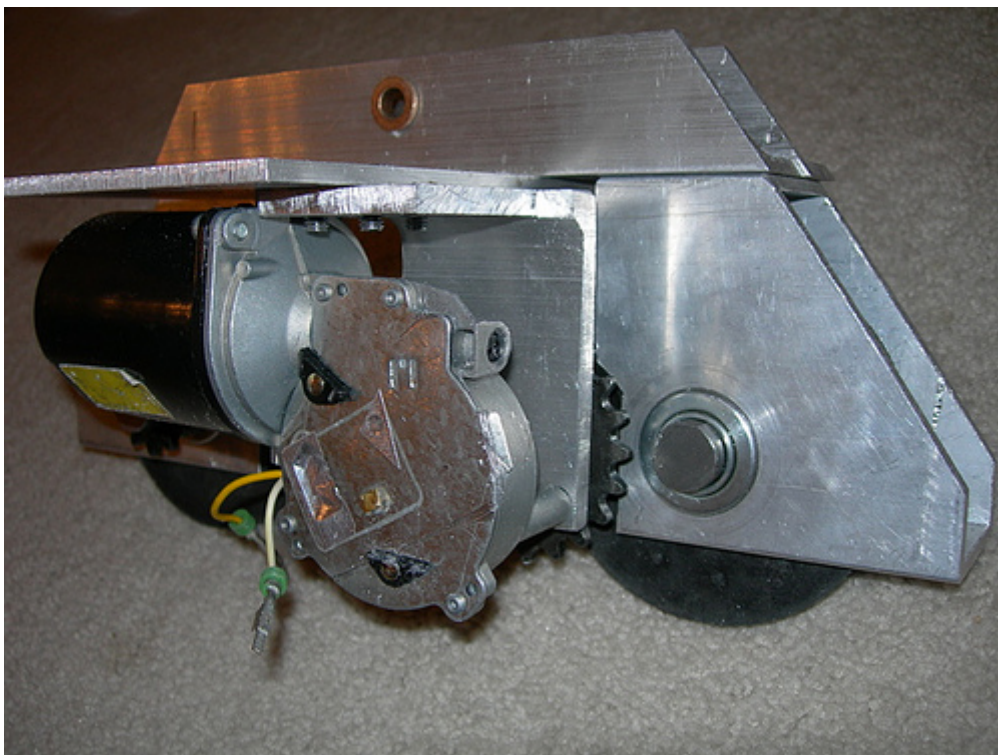


With some iterative fitting and sanding, I was able to get the battery box to mount perfectly on the foot shell, and get the overhang of the drivetrain to fit perfectly within the whole thing (foot shell and battery box).



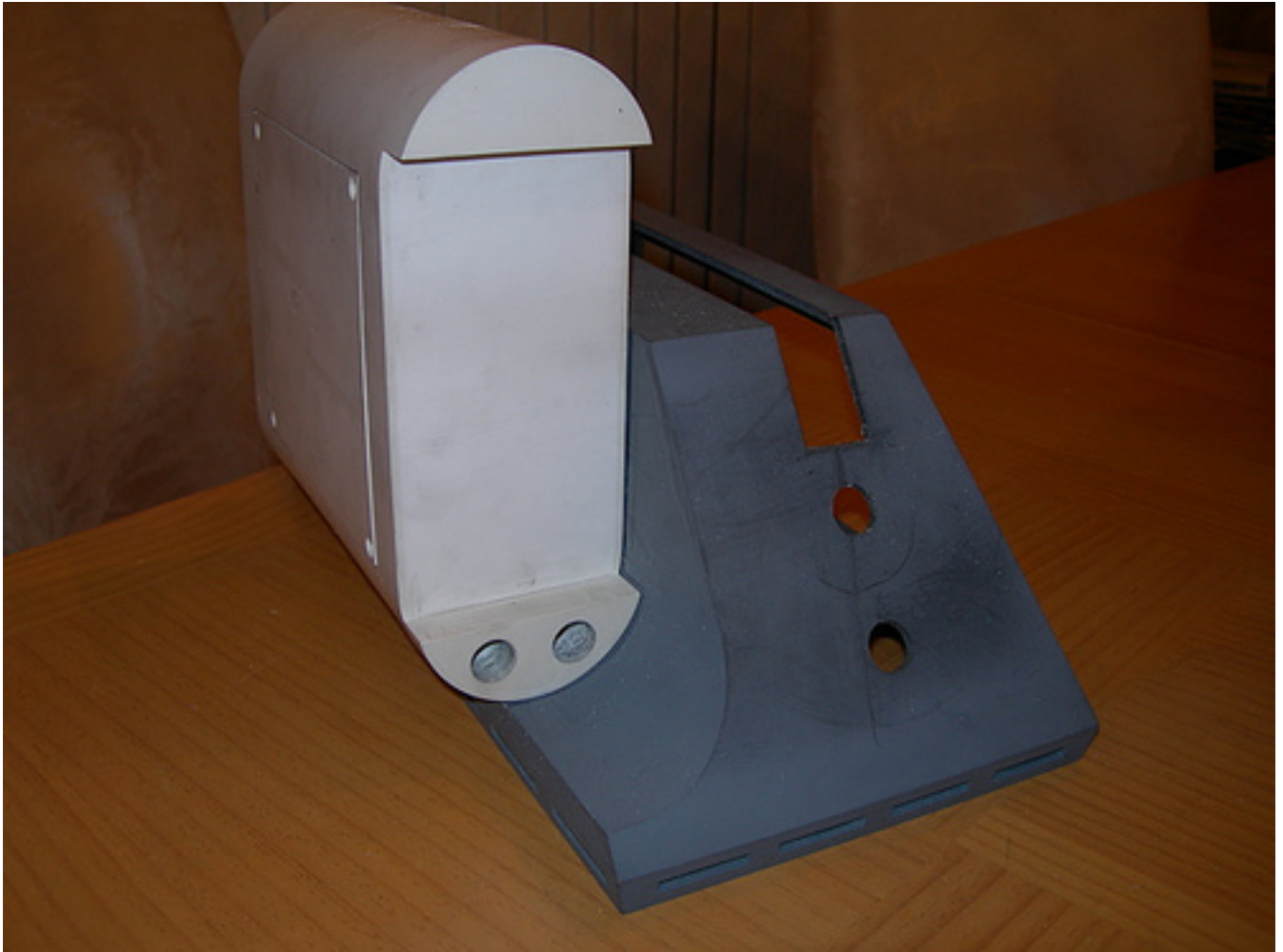


The modifications to the drive train mean that I will have very little room to tension the chain, but hopefully what I have will be enough. Of course, I still need to build up the chain first...





Despite all the cutting I did on the foot shells and the battery box, none of that is visible to the outside world, which is a relief!



*posted by Victor Franco at 10:53 PM* 0 COMMENTS

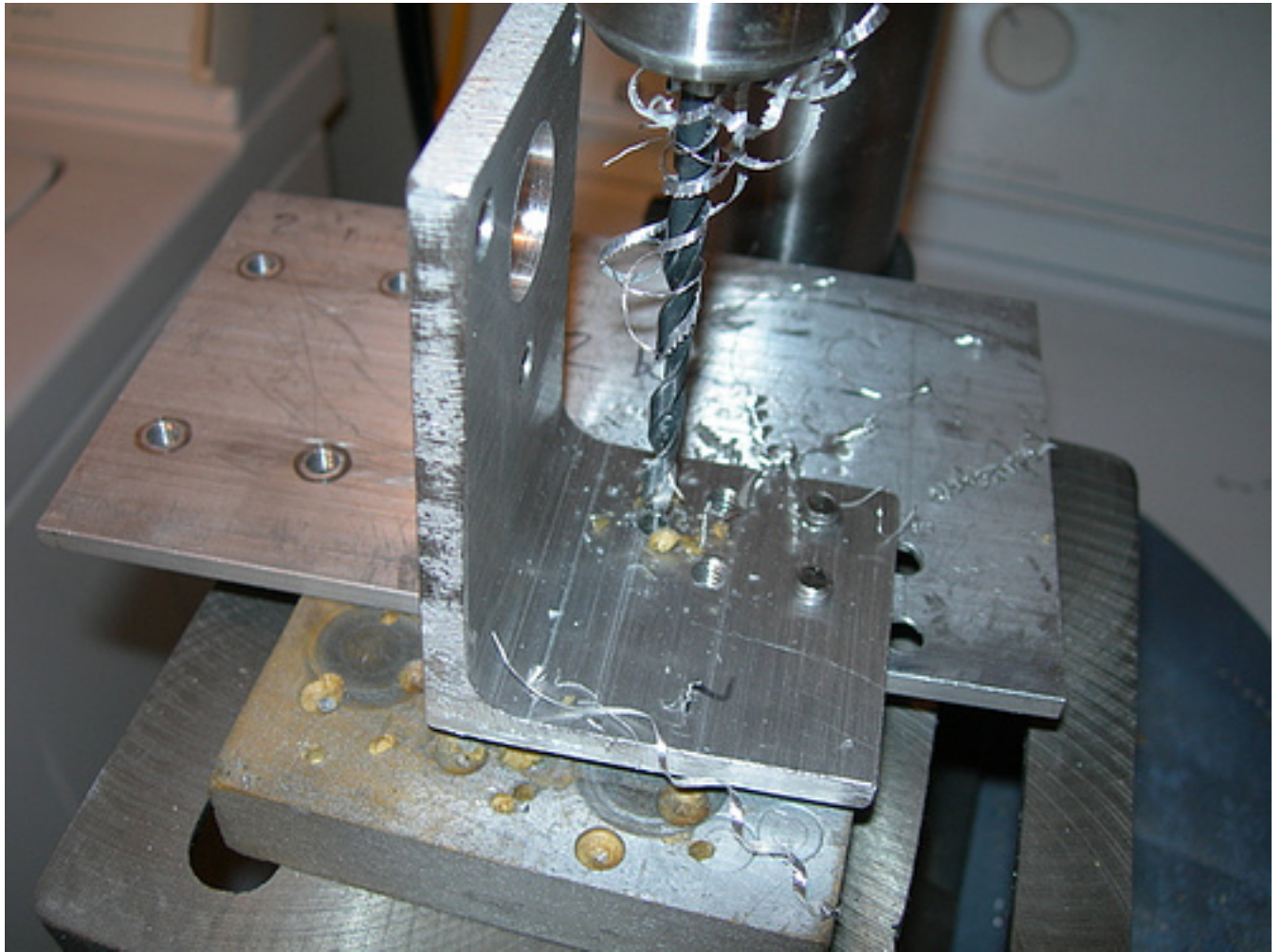
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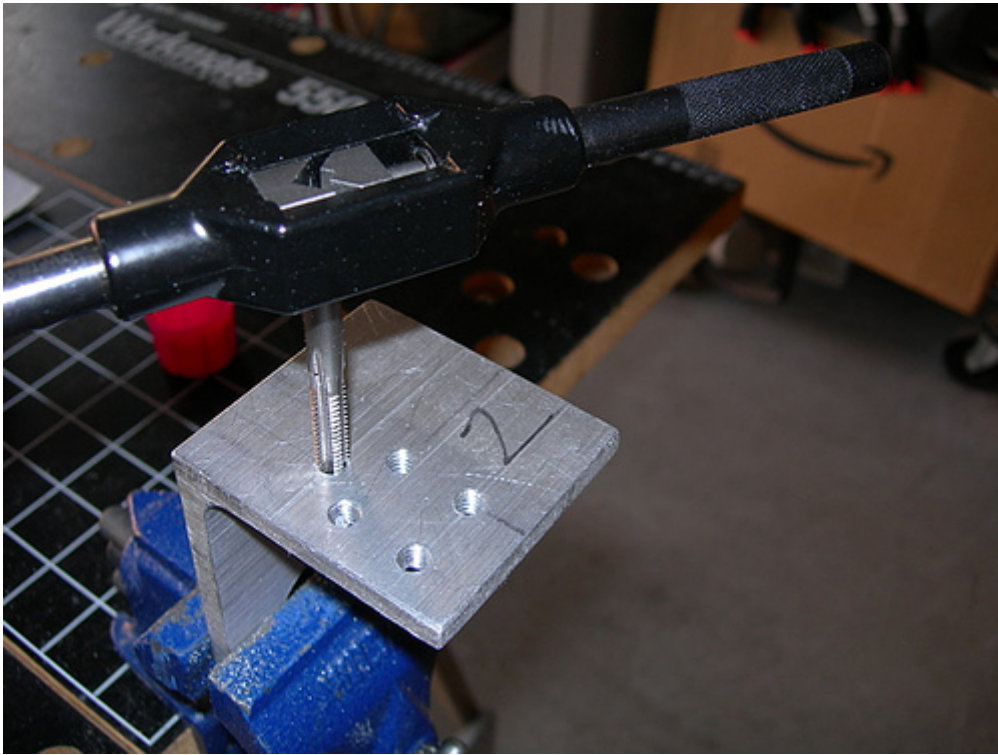
MONDAY, APRIL 09, 2007

## Worked on Right Foot

Today I repeated several steps from yesterday, this time on the right foot.

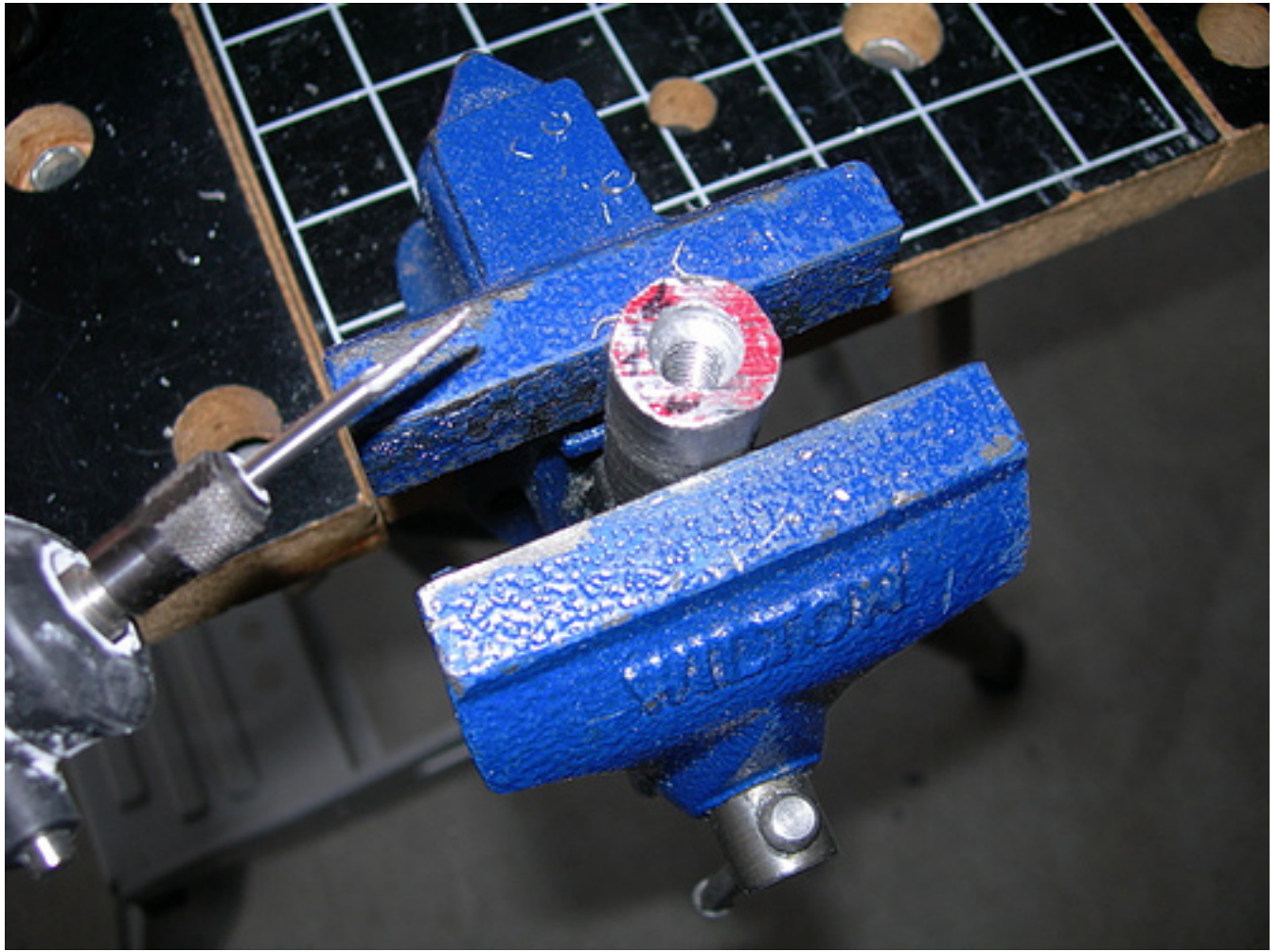
I had another opportunity to drill and tap, this time on the right foot's motor mount bracket. I drilled a 0.201" hole, followed by a 1/4"-20 tap. Like yesterday, this was done to move the motor mount that hangs from the main bar closer to the wheels, so that the motor will reside mostly within the foot shell.





Next, I opened up the base of another shaft adapter so that it could fit closer to the base of the motor shaft when it screws on. I used a 13/32" drill bit and the Dremel with a grinding attachment for this modification.

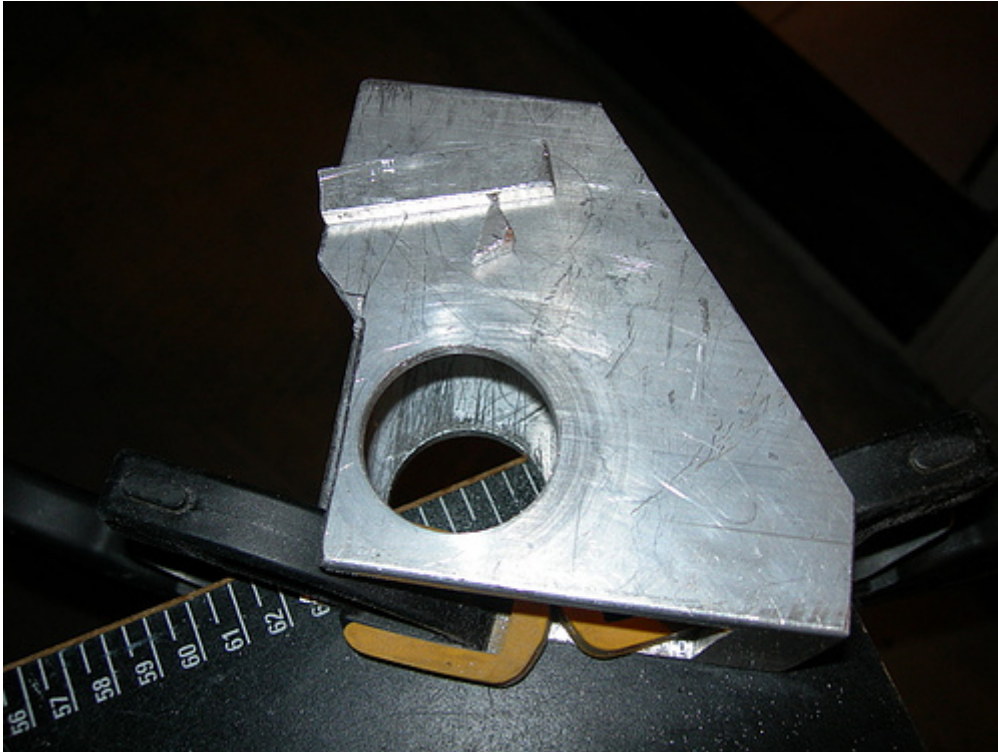






I had to trim some of the wheel housing out to allow the 22-tooth gear some room, just like yesterday.





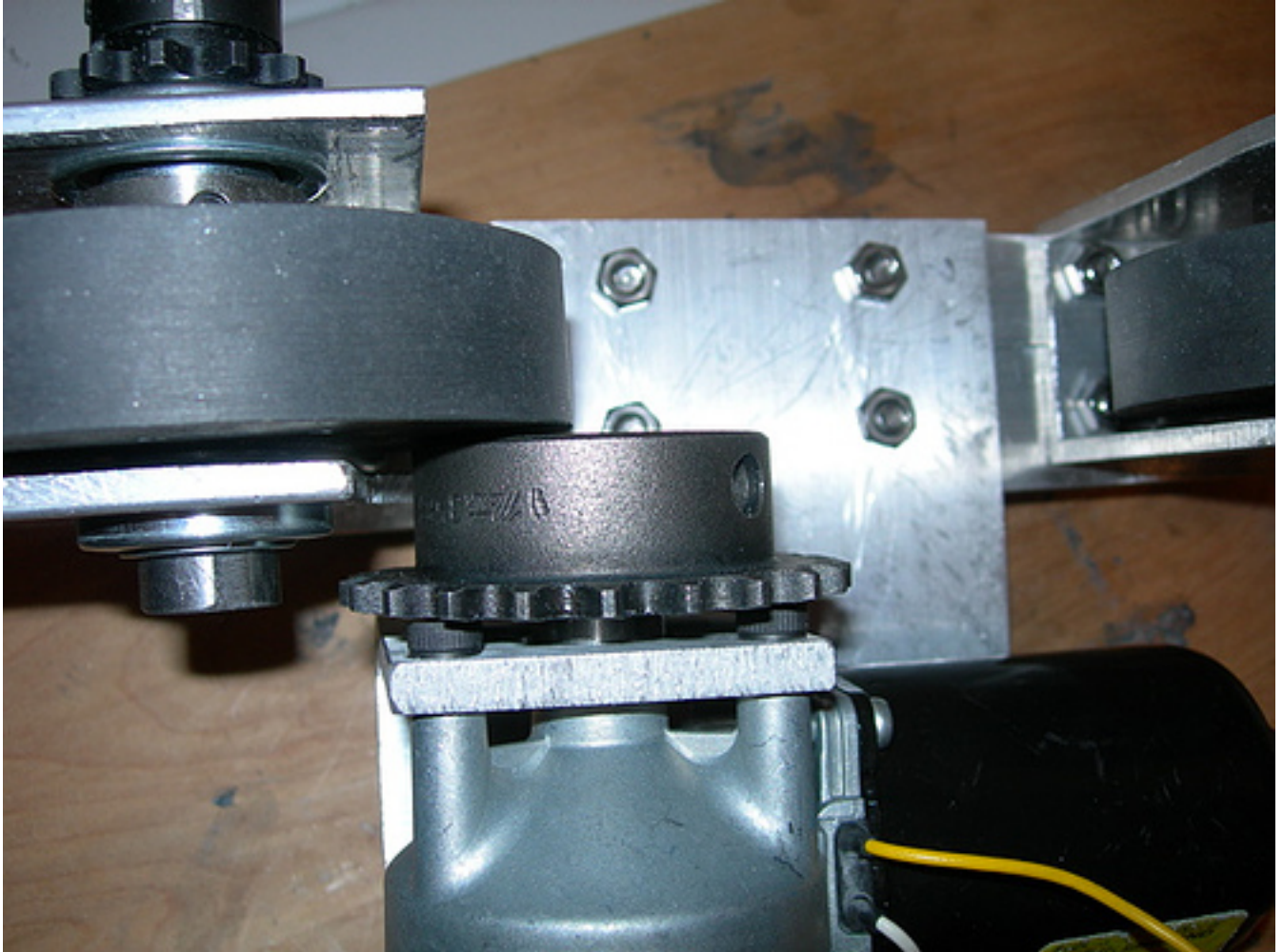
Things are so tight in the right foot drivetrain that I even had to file down some hex cap screws.



I wasn't kidding. You can barely see daylight between the gear and the hex cap



screws on one side, and the gear and the wheel on the other. Making matters worse, I think my shaft adapter has problems, the gear has a slight wobble as the motor turns. It still clears everything, but just barely. That likely portends of problems to come, I'll probably have to make a new shaft adapter.



*posted by Victor Franco at 11:00 PM* 3 COMMENTS

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TUESDAY, APRIL 10, 2007

## Started Working on Shaft Adapter Tool

It's an inevitability that I will have to make more shaft adapters in the (near) future, so I started working on a shaft adapter tool. The idea is to take a 3/4" outer diameter, 1.25" long steel rod with a hole drilled perfectly in the middle and squeeze it half way deep into a tube that has a 3/4" inner diameter. Then a blank steel rod with no hole can be drilled. [Here](#) is an example.

I started with a pre-drilled shaft adapter, and sanded the corner off.







Then I started whaling on it with a hammer to force it into the tube. I'm finding it difficult to force perfect alignment in the tube. I should probably use a vise, or something other than hammer. It started getting late, so I put down the hammer and I'll get back to this another day.





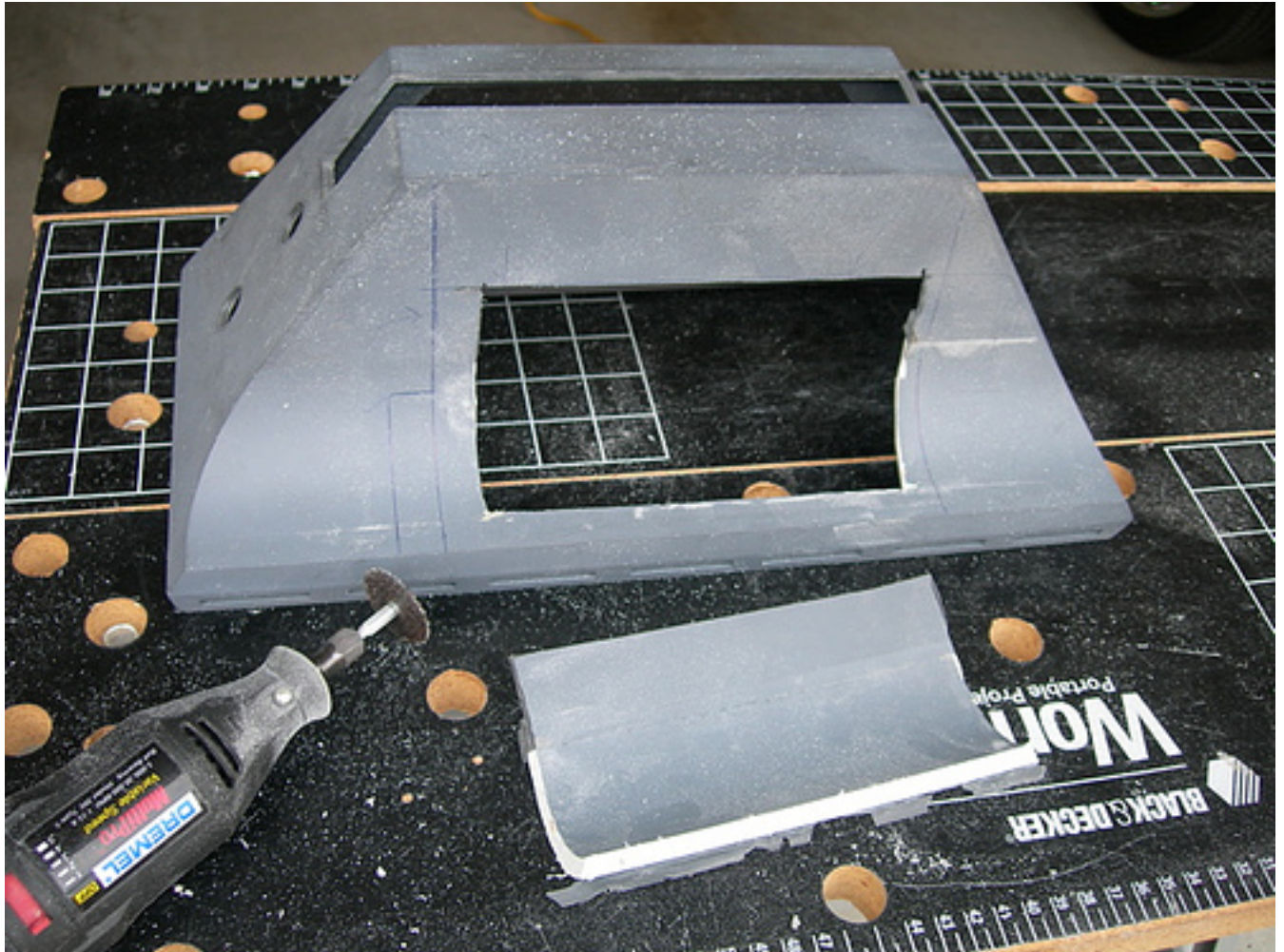
*posted by Victor Franco at 10:32 PM* 0 COMMENTS

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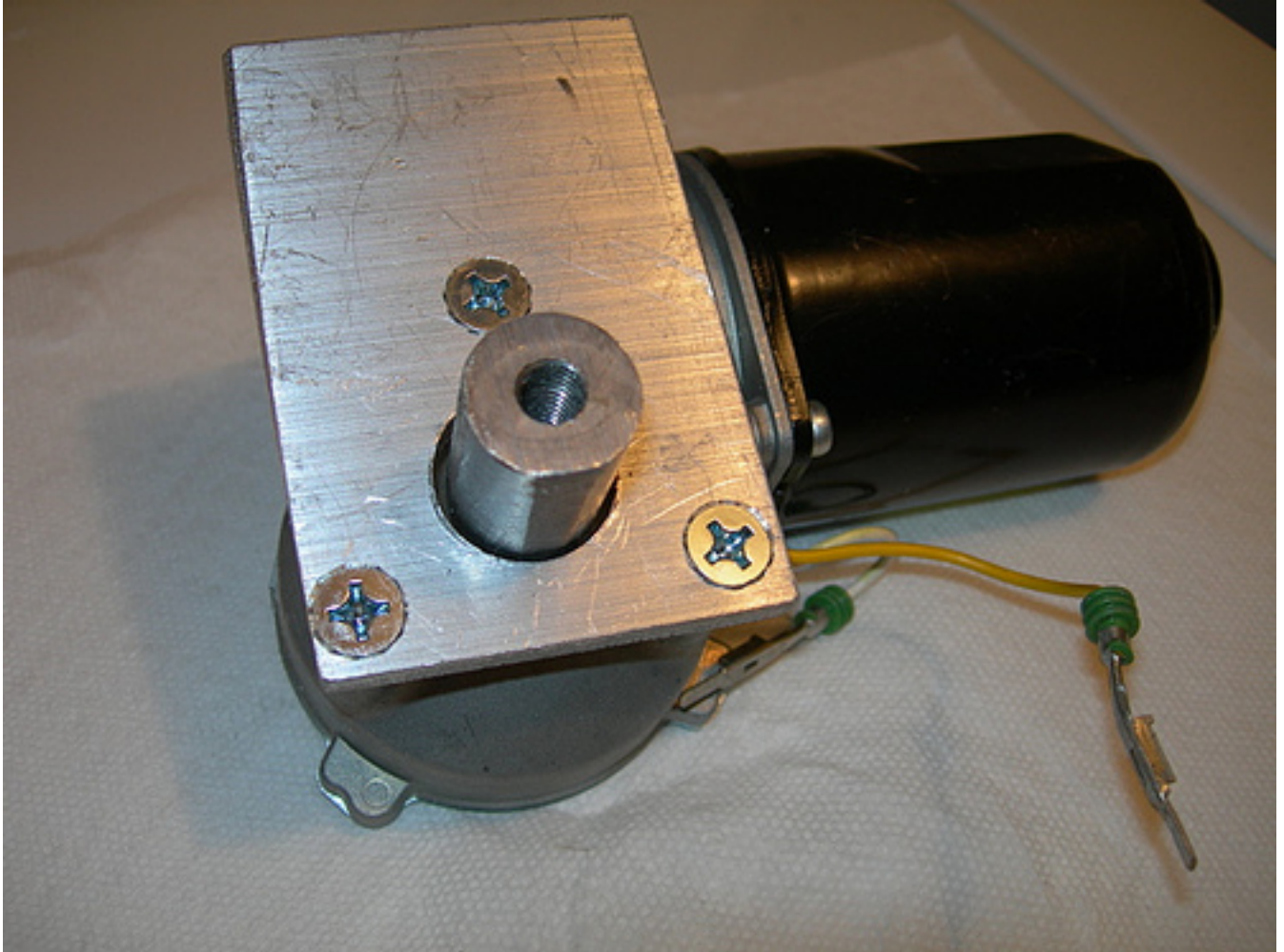
WEDNESDAY, APRIL 11, 2007

## **Cut Right Foot Shell for Drivetrain, Countersunk Screws in Motor Mounts, Battery Box Setback**

Today I cut the right foot shell to accommodate the drivetrain.



On [Mike's advice](#), I countersunk some new screws into the motor mounts, to allow more breathing room for the gear to spin.



The good news: The right foot shell surgery was a success. The bad news: The right battery box will not conceal the entire motor. On the left foot, this was not a problem, the end of the motor points toward the back. On this right foot, the end of the motor points to the front, exactly where the battery harnesses go. There really isn't enough room to slide the battery box forward, and even if I did, it would look funny compared to the left foot.

I have already set Plan A into motion, I have sent an e-mail to Craig Smith begging to get on a list for a set of longer battery boxes. I am formulating Plans B and C in my head now, but they are not attractive (cut & extend, or scratch-build).

Dang, I was so close.





*posted by Victor Franco at 11:08 PM* 6 COMMENTS

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THURSDAY, APRIL 12, 2007

## Started Drilling Dome Drive Bar

This morning I went to Industrial Metal Supply and picked up a 12"x3"x3/16" steel bar. I had them cut it in half, into 6" long segments. I plan to use this for the bar that the Saturn wiper motor will hang from for my dome drive.

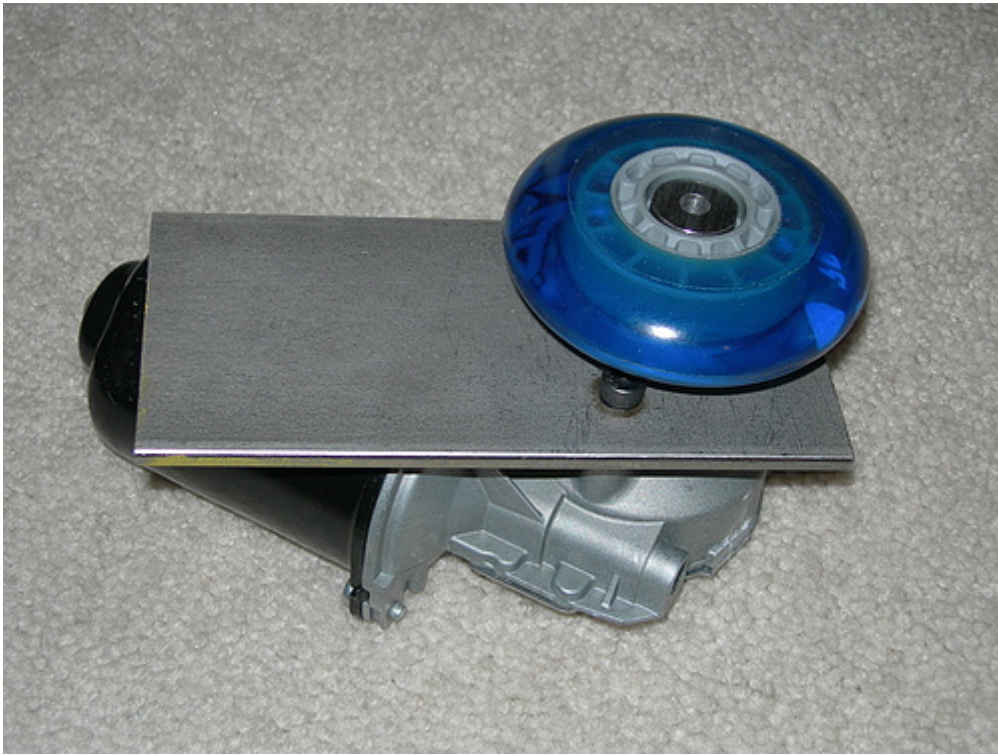
Using one of my drivetrain motor mounts as a template, I drilled four holes into the bar. I was unable to use the 7/8" Forstner bit that I used on the drivetrain for the middle hole, that bit won't go through steel. Instead I used a regular 1/2" drill bit.



The holes seem to line up okay. I will probably try using the Dremel to widen the center hole to  $7/8"$ , so that the  $3/4"$  shaft adapter can fit through it. Right now it is completely above the bar.

I will drill one more hole toward the opposite end of the bar, and that will be the pivot point through which a bolt will go. The bolt will then pass on through the top of the frame, and allow a spring underneath the top of the frame to pull the dome drive wheel into the Rockler bearing.

I'm using the hex cap screws to hold the motor on at the moment, but I will likely have to replace at least two of the three hex cap screws with countersunk machine screws so that nothing rubs against the bottom side of the top of the frame.



*posted by Victor Franco at 10:07 PM* 0 COMMENTS

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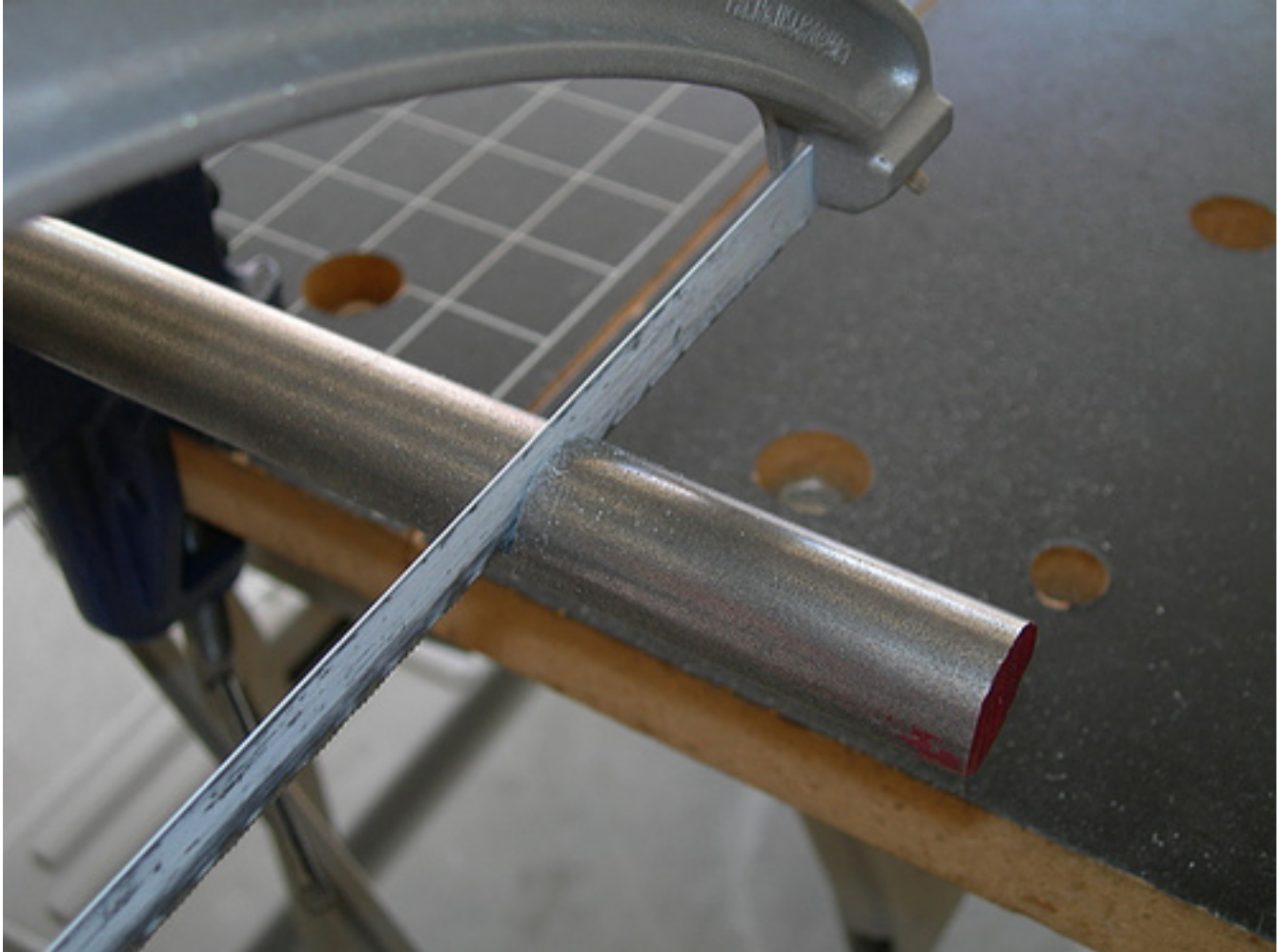
SATURDAY, APRIL 14, 2007

## Continued Working on Dome Drive

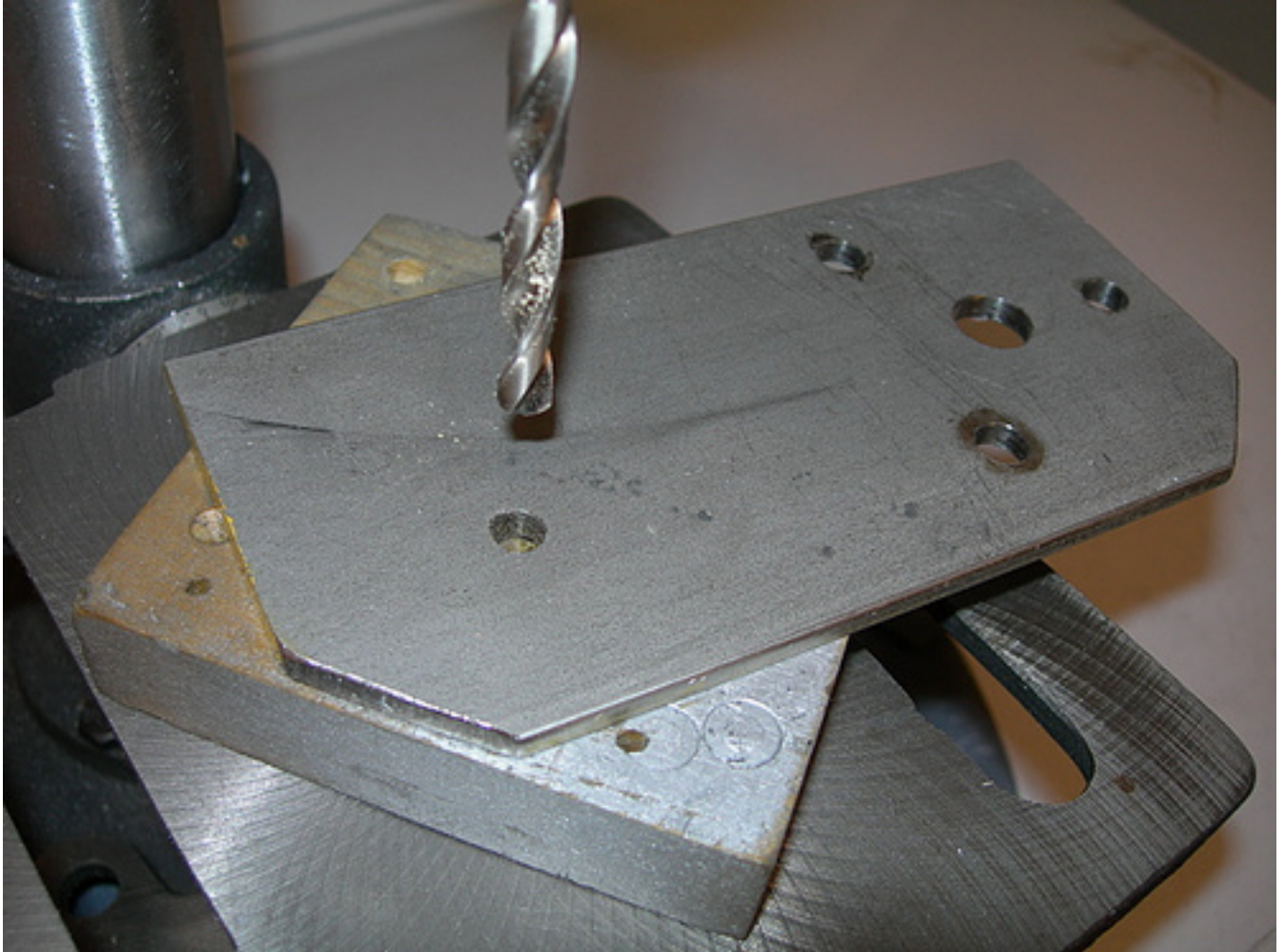
After a rare day off from building yesterday, I resumed work on the dome drive.

First, I needed to cut a shaft adapter that is longer than the ones used on the feet, since this one has to pass through the frame and wheel. More hacksawing through solid steel.





Next, I trimmed a couple of corners off of my dome drive bar (again hacksawing through steel), and then drilled the pivot hole.



I drilled a hole in the frame and attached the dome drive with a 1/4" bolt, using some washers to help with the spacing and to distribute the stress. The fit seems pretty much perfect. I'm using a foot shaft adapter as a temporary stand-in, until I can drill the longer piece that I cut today.



Oh yeah, and I also visited the R2 mailbox closest to my house (about 11 miles away). This mailbox is in Newport Beach, CA.





*posted by Victor Franco at 11:49 PM* 2 COMMENTS

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SUNDAY, APRIL 15, 2007

## **Lunch with Daniel, Mike Rescues Battery Box**

Several of us got together for lunch today at Red Robin with Daniel Deutsch. From left: Daniel Deutsch, Guy Vardaman, Matt Munson, Victor Franco, Vince Sanchez, Mike Senna, Chris Romines.



Just when Mike thought lunch was over and he could go home, I dragged him over to my house and put him to work. I was at a loss on what could be done to salvage the right battery box to make it fit the drivetrain. Mike analyzed the problem and quickly came up with a plan.

First, he lengthened the slots at the top of the wheel housing with the Dremel, to allow the wheel housing to slide further back. This allows the motor to scoot back without running into the wheel housing.





Next, he drilled four new holes in the main bar, with the bar positioned about  $\frac{3}{8}$ " further back than it had been. Since the motor mount hangs from the main bar, this moved the motor back, allowing the motor tip to barely fit inside the battery box.





Finally, to allow more room for the 22-tooth gear, Mike Dremeled some material off of the wheel housing near the bearing.



After Mike left, I got busy chopping on the right battery box, which I had given up for dead a few days ago.





I had to remove some material from the inside of the battery box, near the tip of the motor, to get everything to fit.





Success!! This was the last potential show-stopper (that I know of, at least). I just need to keep moving forward now, and not mess anything up.



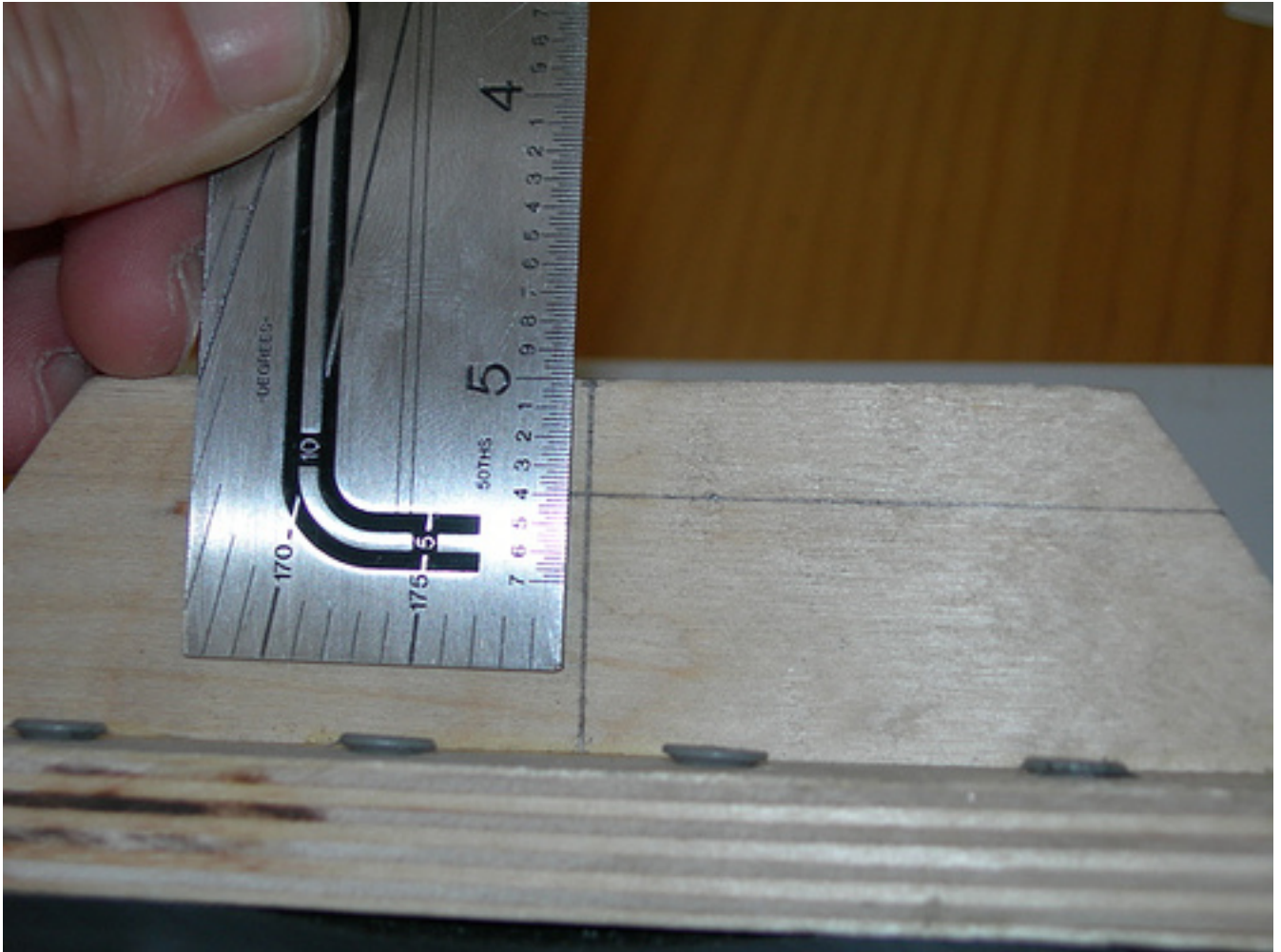
*posted by Victor Franco at 10:23 PM* 0 COMMENTS

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MONDAY, APRIL 16, 2007

## **Drilled Center Foot Ankle Bolt Hole**

Tonight I finally drilled the ankle bolt hole for the newest incarnation of my center foot. The hole is 0.40" from the top of the foot channel.



I lined up everything on the drill press and clamped it down, and then did the drilling.





Did it work??

I don't know! I thought I had some more bronze bushings so that I could try it out in the foot shell with the ankle bolt, but I don't have any, so I can't do a true test just yet. Hopefully I'll get my hands on the bushings shortly.

Normally the suspense would be killing me, but I'm just about numb now with all the ups and downs I've had with this droid lately.

*posted by Victor Franco at 10:05 PM* 0 COMMENTS

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TUESDAY, APRIL 17, 2007

## Fixed Dome Motor

I would have gotten nothing done today if it weren't for the fact that a solder joint on my 24-volt conversion of the dome motor had worked itself loose. I re-soldered it and all is well now.

Tomorrow I should be able to finished cutting a little more material from the foot shells and battery boxes to allow access to the ankle bolt hole on each foot. Then the feet and battery boxes can go onto the droid.

*posted by Victor Franco at 11:21 PM* 0 COMMENTS

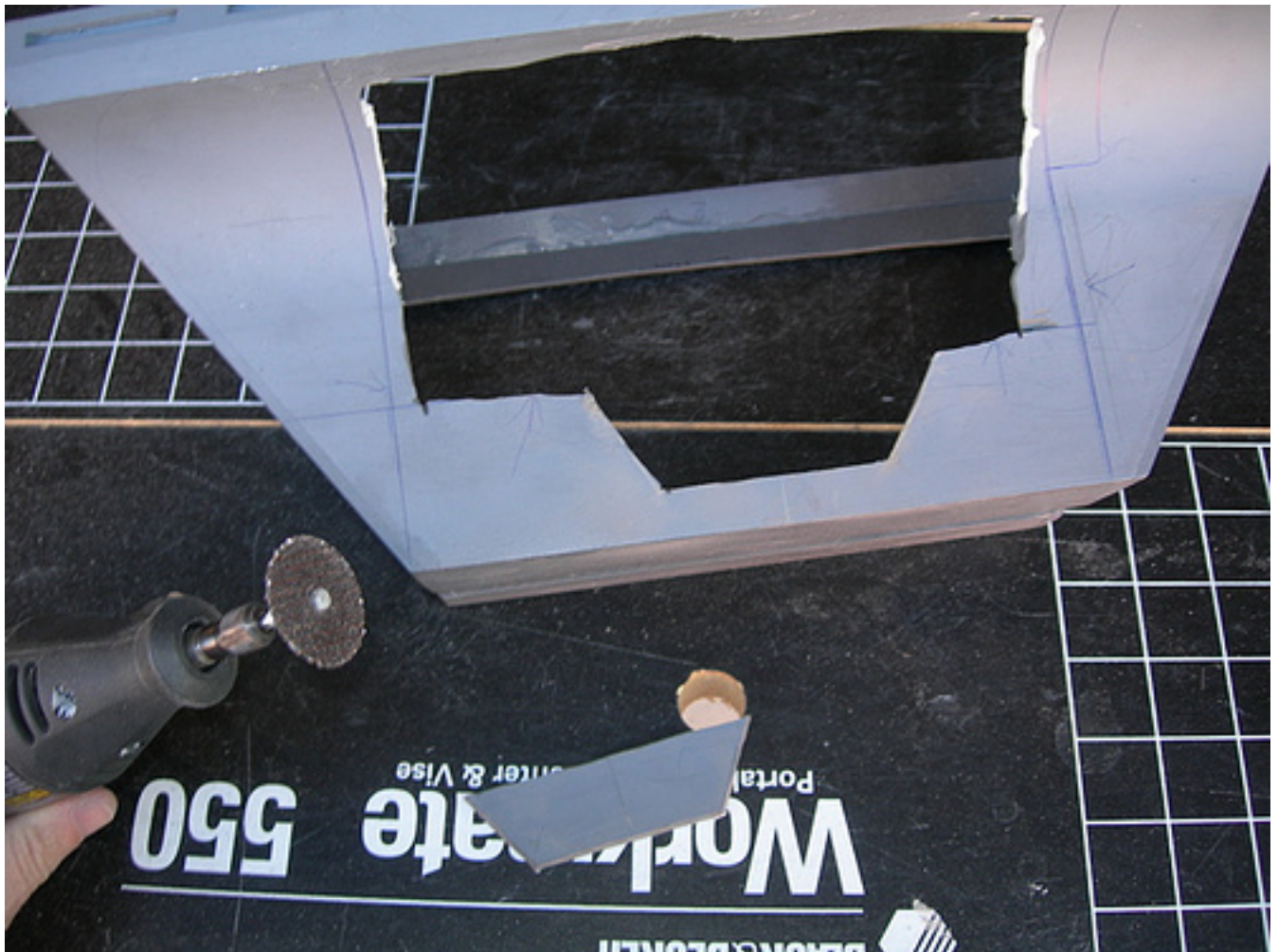
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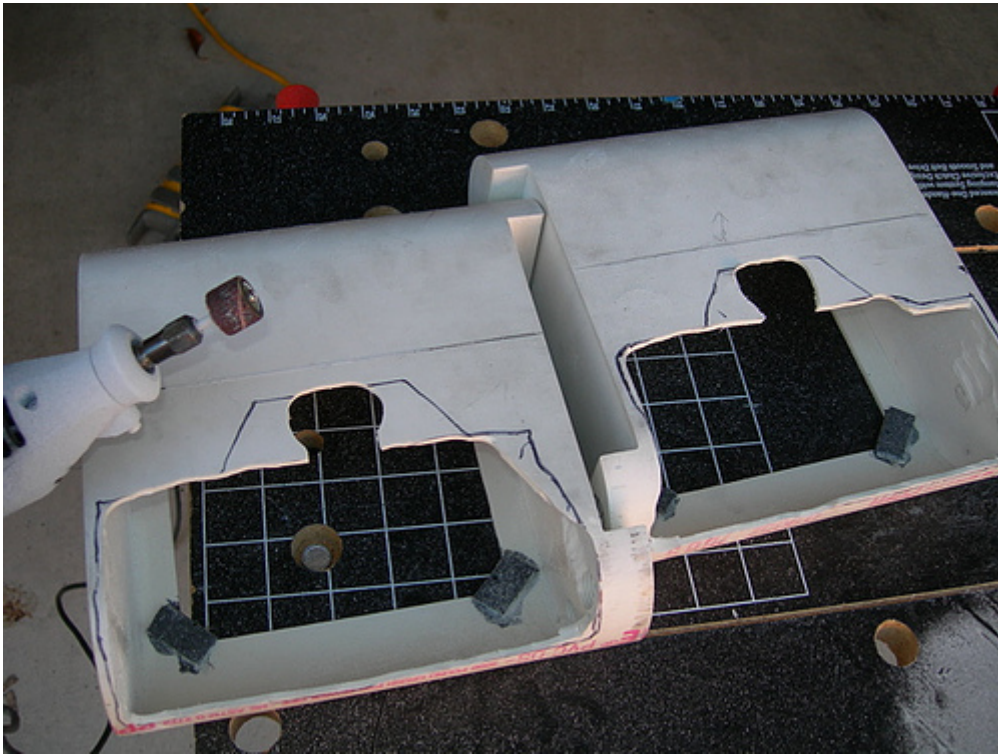
WEDNESDAY, APRIL 18, 2007

## Finished Cutting Battery Boxes & Foot Shells, Trimmed Axle, Test Fitted Feet

Today I cut the battery boxes and foot shells to allow access to the bolt that will hold the feet onto the ankles. This pretty much wraps up the cutting on these parts, except I'll need to open a small hole at the top of each outer foot shell for the motor wires to pass through.

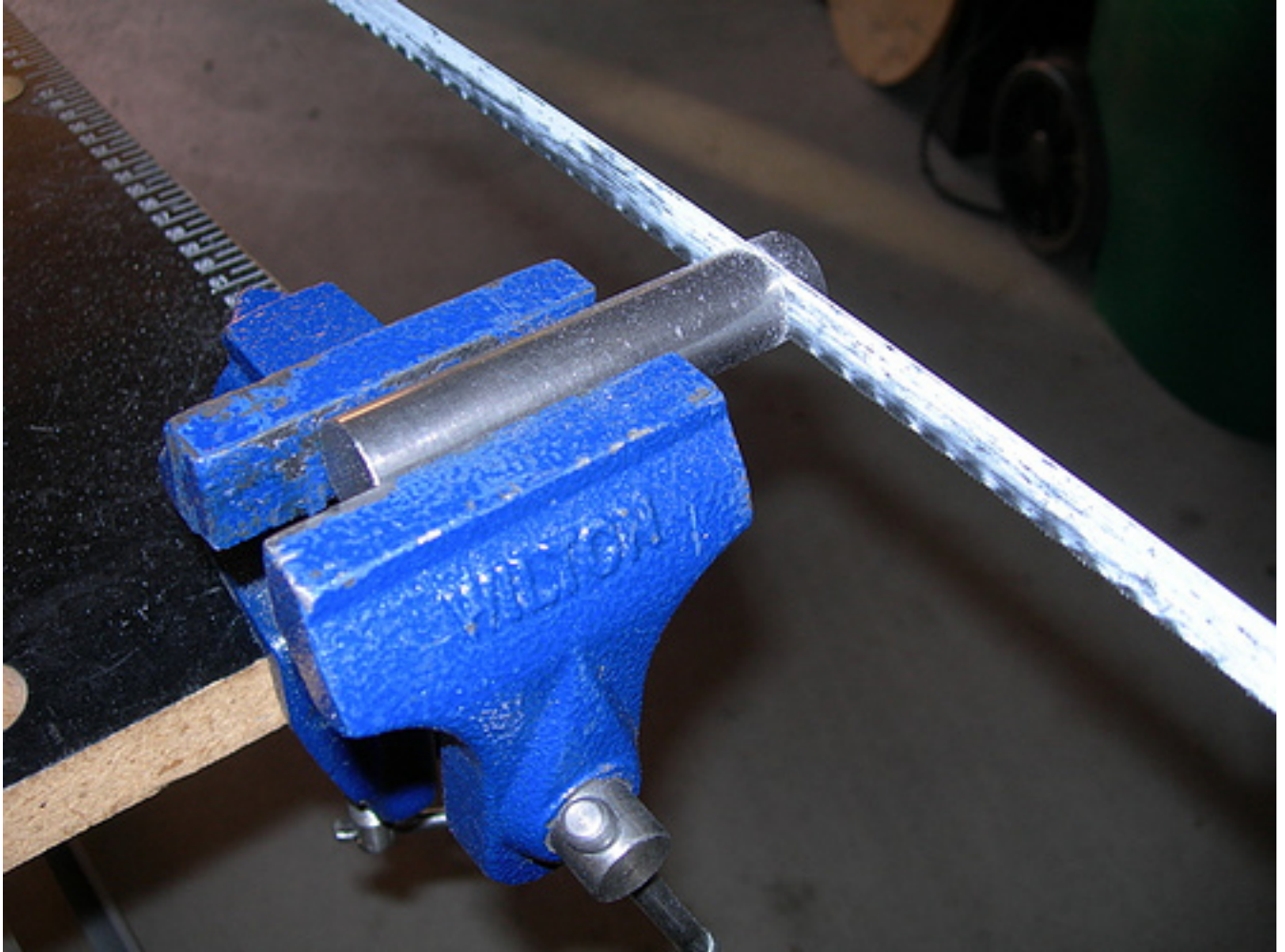
It isn't necessarily pretty, but it doesn't need to be.





I also had to trim one of the axles, Sunday's drivetrain modification brought the 22-tooth gear closer to the axle overhang, so this got rid of the overhang.





And then, it was time to do a test fit of the drivetrain, foot shells and battery boxes on the droid.



The biggest problem is that the round areas at the bottom of the center and right ankles are running into the foot shells as R2 leans back. I think I'm going to have to sand or file down (and repaint) these curved areas on the center ankle, and do something to the right ankle cylinder holder to get it a little higher. Without these modifications, R2 won't be able to tilt the standard 36 degrees.

Still, it was nice to see him on three feet for the first time in a long while.



*posted by Victor Franco at 11:04 PM* 0 COMMENTS

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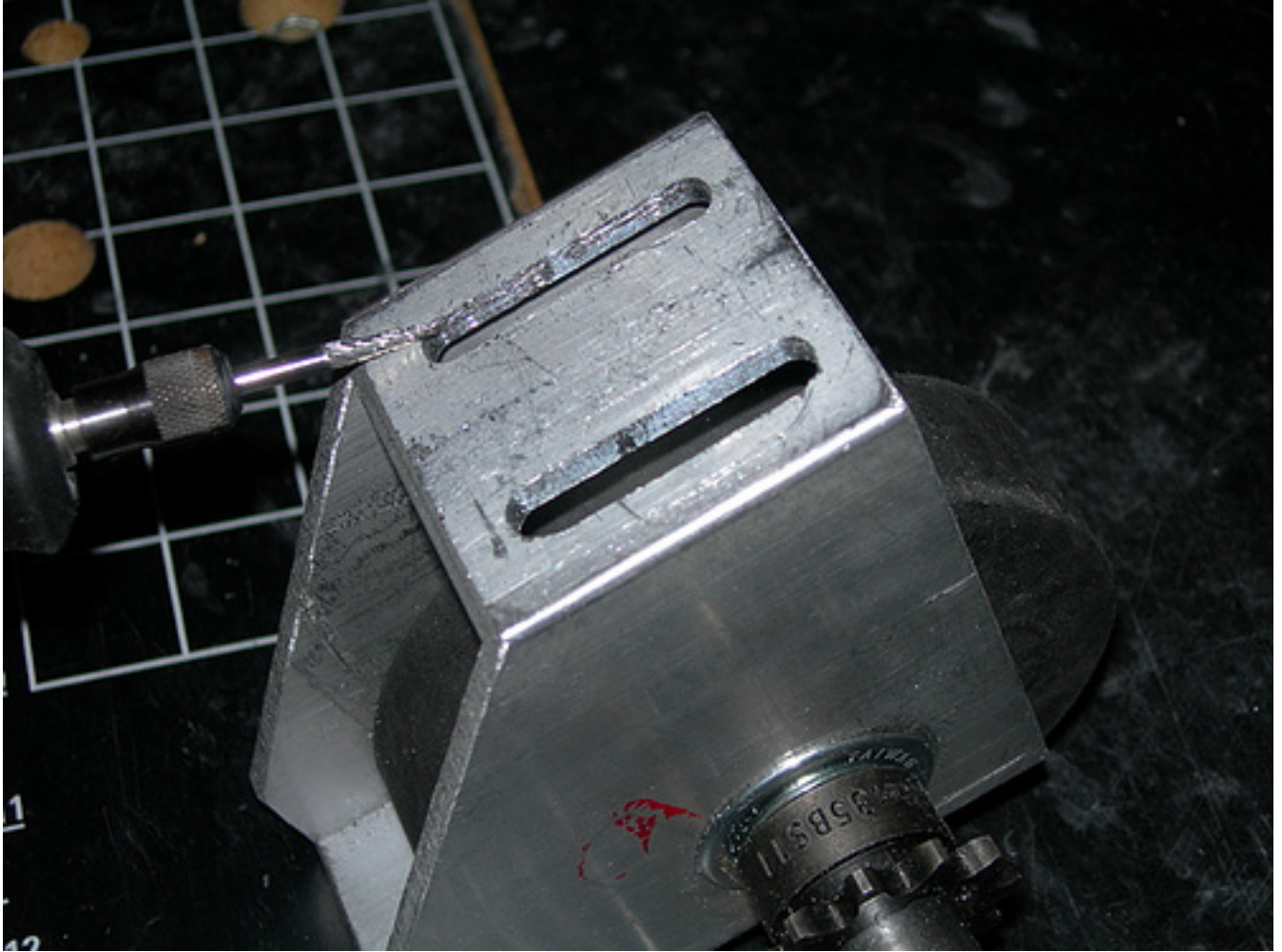
THURSDAY, APRIL 19, 2007

## **Built & Installed Drivetrain Chain**

Another learning opportunity, this time in working with chain. I had purchased 10 feet of ANSI 35, 3/8" pitch chain. I didn't even know there were ANSI standards for chain until this project. Tonight I worked on getting the chain installed on the drivetrain.

First, I lengthened the slots on one of the wheel housings with the Dremel, to allow more room for chain-tensioning.



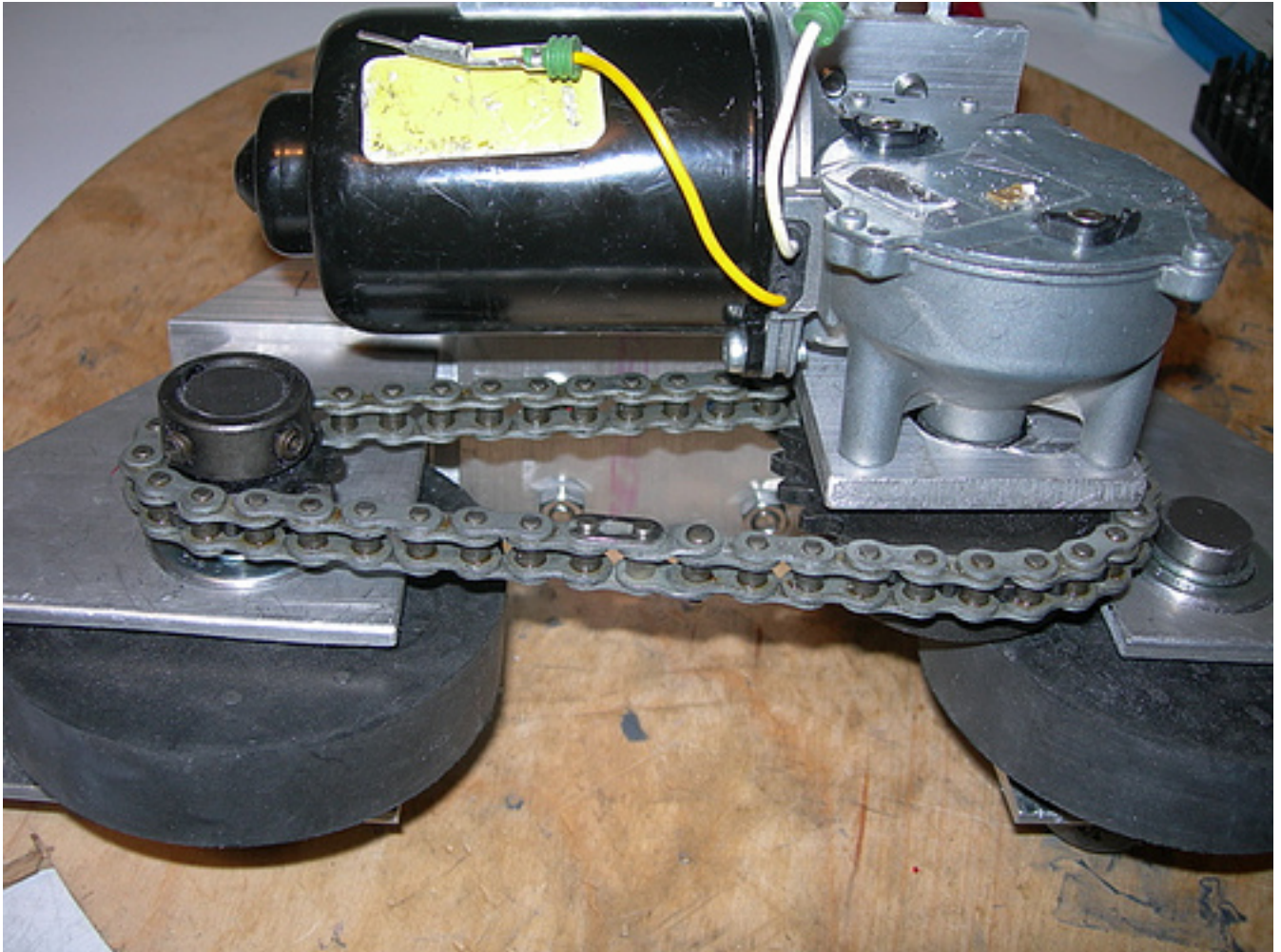


I used an awesome [chain breaking tool](#) that I purchased from McMaster-Carr. It's a bit pricey, but to me it was worth every penny. It made unlinking the chain effortless, and it came in handy several times tonight.



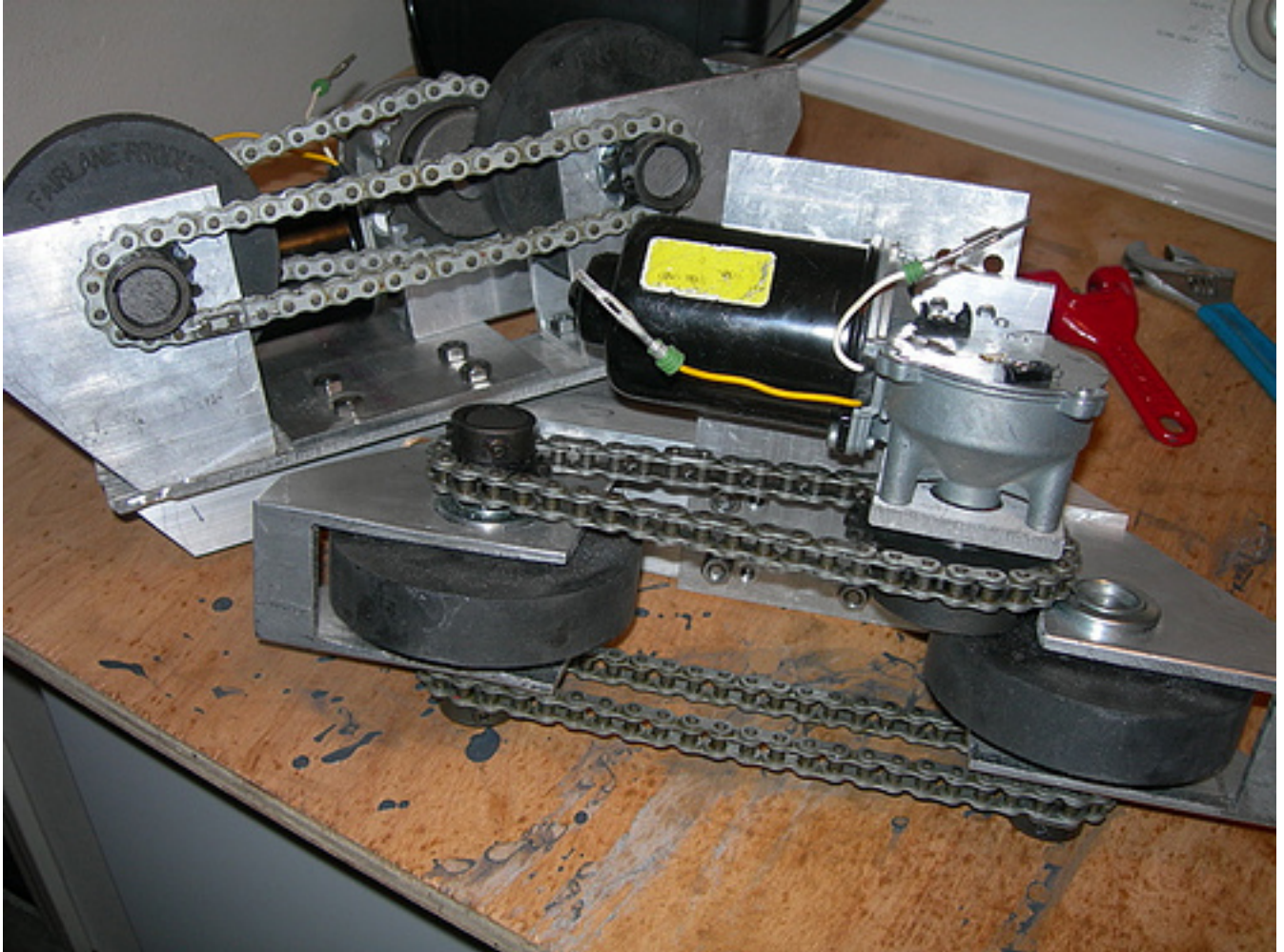
Once the chain was of the the approximate needed length, I had to install connecting links and sublinks to get the chain just about right. I adjusted the wheel housings away from each other to tension the chain.





Four lengths of chain (two for each drivetrain) were installed. The motor drives one wheel, and then the other wheel is driven on the other side of the drivetrain with gears and chain. I tested the setup with the battery, and all the wheels are spinning like they should. A four-wheel drive droid.





My only concern is that due to the overhang of the axle bearings on the outside of the wheel housings, I had to slide the small gears out a bit to clear them. I'm worried that the gears will have trouble fitting into the foot shells now, but I haven't test-fitted them yet.

*posted by Victor Franco at 11:32 PM* 0 COMMENTS

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SATURDAY, APRIL 21, 2007

## **Electronics Shopping, Dome Drive Shaft Adapter Fixed**

In preparation for R2's first steps, Mike and I went shopping for things like wire, switches, fuse holders, and other related items. We ended up going to Radio Shack (spare battery holders, switches, 12 gauge wire), a local electronics store named Orvac Electronics (CAT5E cable with multiple strands for wiring up sound, fuse holders, main circuit breaker, wire connectors), and Home Depot (power blocks).



I still need to buy some 30-amp fuses and some tie-downs for the wires.

The other day I tried drilling the shaft adapter for the dome drive, but either the drilling or the tapping (or both) turned out crooked, so the shaft adapter wobbled as the motor turned. Mike helped redrill and retap, and the result was a much cleaner rotation.

Rather than tapping by hand, Mike had the idea of putting the tap onto the drill press and manually turning the chuck to tap the hole. That way, the tap would go in at exactly the same angle as the hole that was drilled on the drill press. It worked out well.



I still have a ton of work to do before the droid is wired up for movement. I have to build a small assembly for the dome drive electronics. I also need to set up a mount for the sound board. And I still need to pin the shaft adapters to the motor shafts. Looks to be a busy upcoming week.

*posted by Victor Franco at 10:46 PM* 0 COMMENTS

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SUNDAY, APRIL 22, 2007

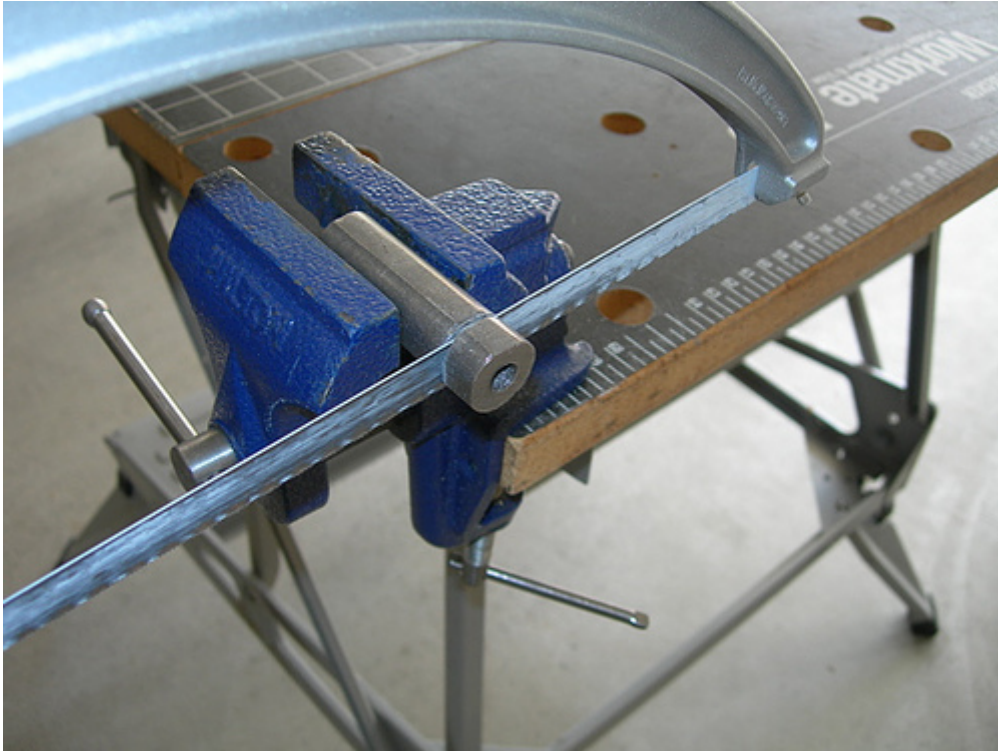
## More Parts Shopping, Worked on Shaft Adapters, Vantec Mounts, Rockler Bearing Screws

Today I picked up a bunch of 30-amp fuses from Kragen, and some tie-downs for the wire from Home Depot, so the remaining items on the shopping list is getting shorter.

Just when I thought I was done sawing steel, I found that the dome drive shaft adapter was just a little too long, it was hitting the D-cell battery holder in the



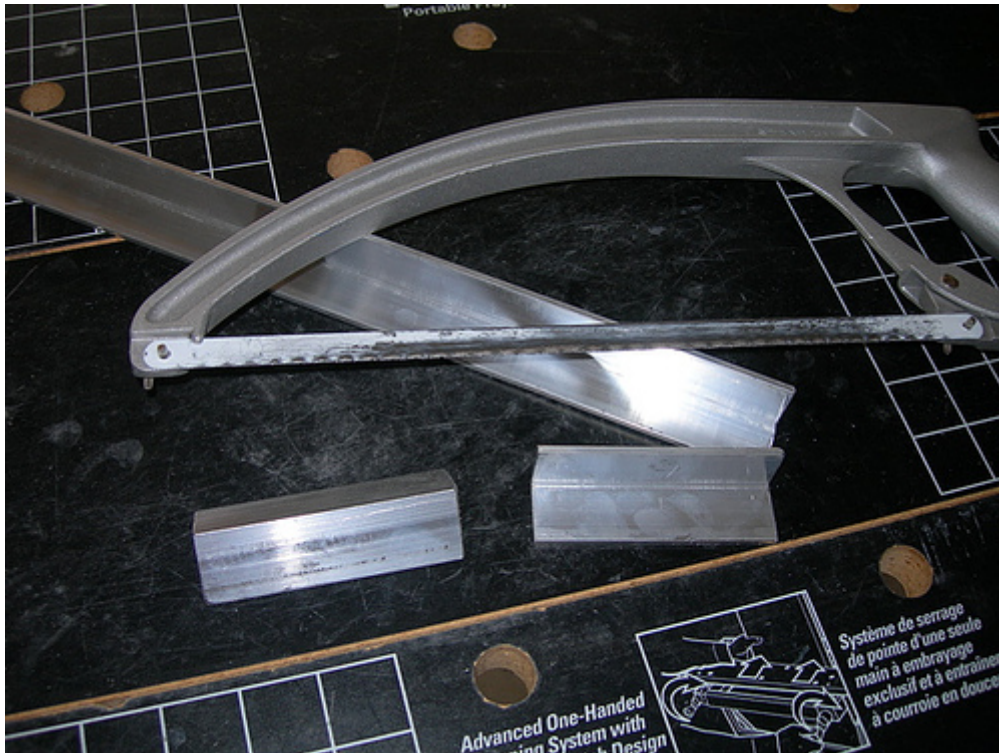
dome as the dome spun. So I sawed that down, and now the dome spins freely.



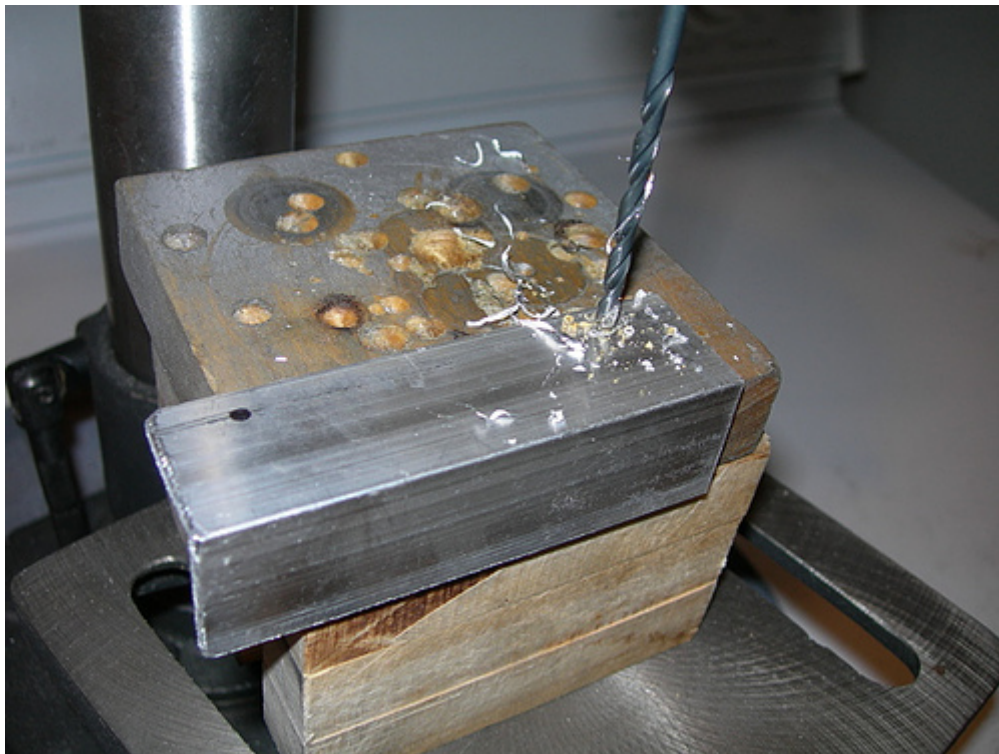
I also sawed open the dome drive plate, so that I can get the motor in and out of the assembly. With the shaft adapter permanently installed (see below), I did not want to lock this in place for eternity. Hopefully *now* I'm done sawing steel, for a while at least.



Of course, there's always aluminum to saw. I'm using 1" angled aluminum to mount the Vantec speed controller and Keycoder.



After cutting the aluminum to size, I drilled and installed it with #6 screws.



The bare side of the aluminum will be screwed onto the inside of my wooden frame.

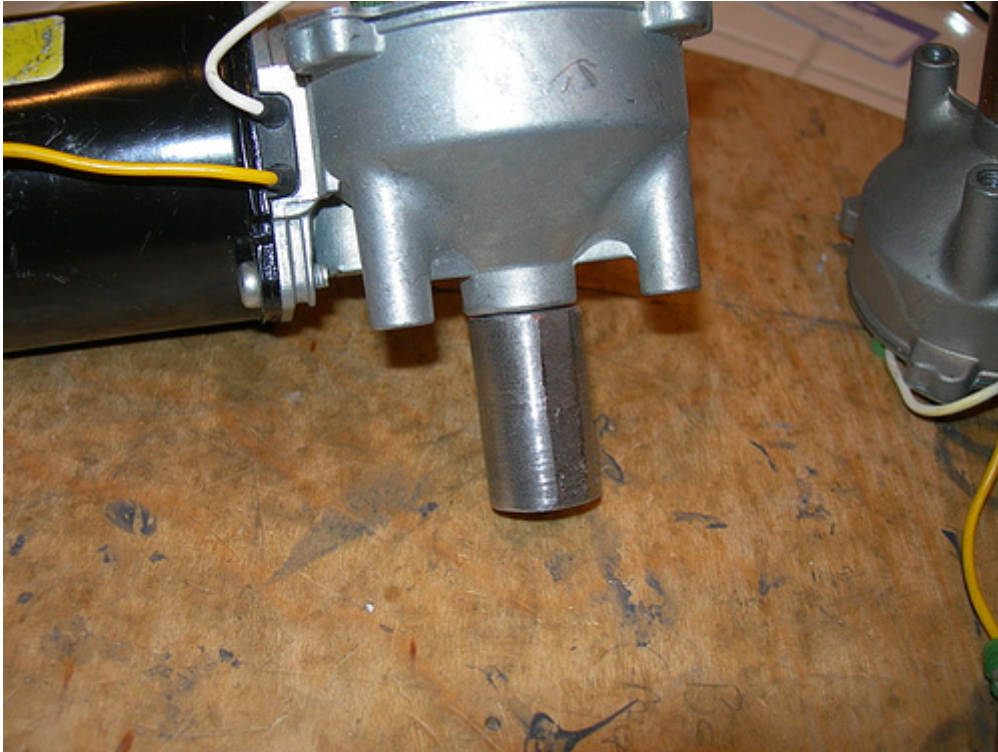




I JB Welded the two motor shaft adapters and the dome drive shaft adapter to their respective Saturn wiper motors.

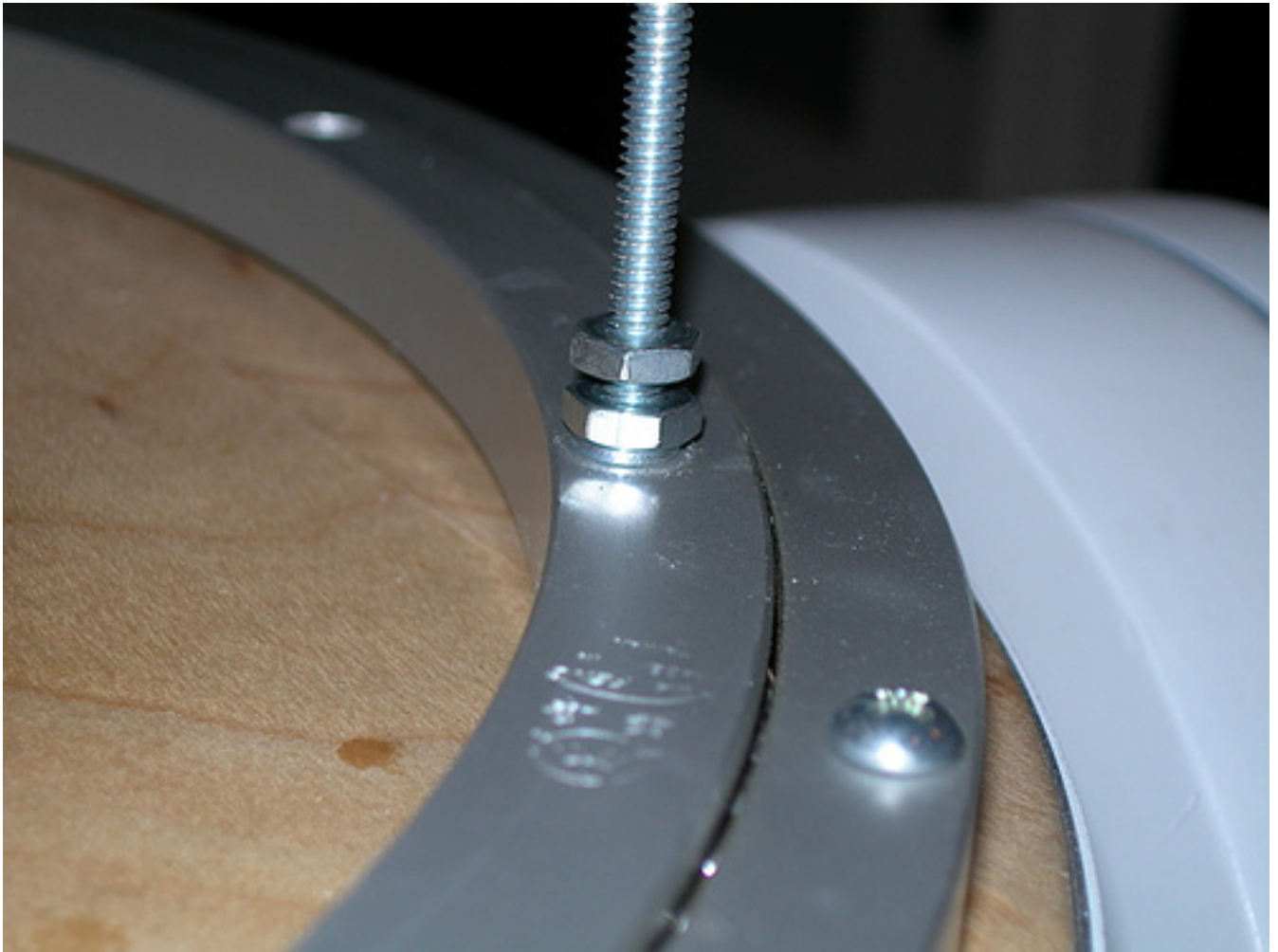


I will also drill a 1/8" diameter hole near the base of the shaft adapter, and insert and JB Weld a 1/8" steel pin, to help secure the shaft adapters to their shafts.



Finally, I picked up some #10 lock washers and installed them on all six screws that secure the dome to the Rockler bearing. With the lock washers installed underneath the bottom nut on each screw, the screws are now on the bearing nice and tight.





*posted by Victor Franco at 11:37 PM* 0 COMMENTS

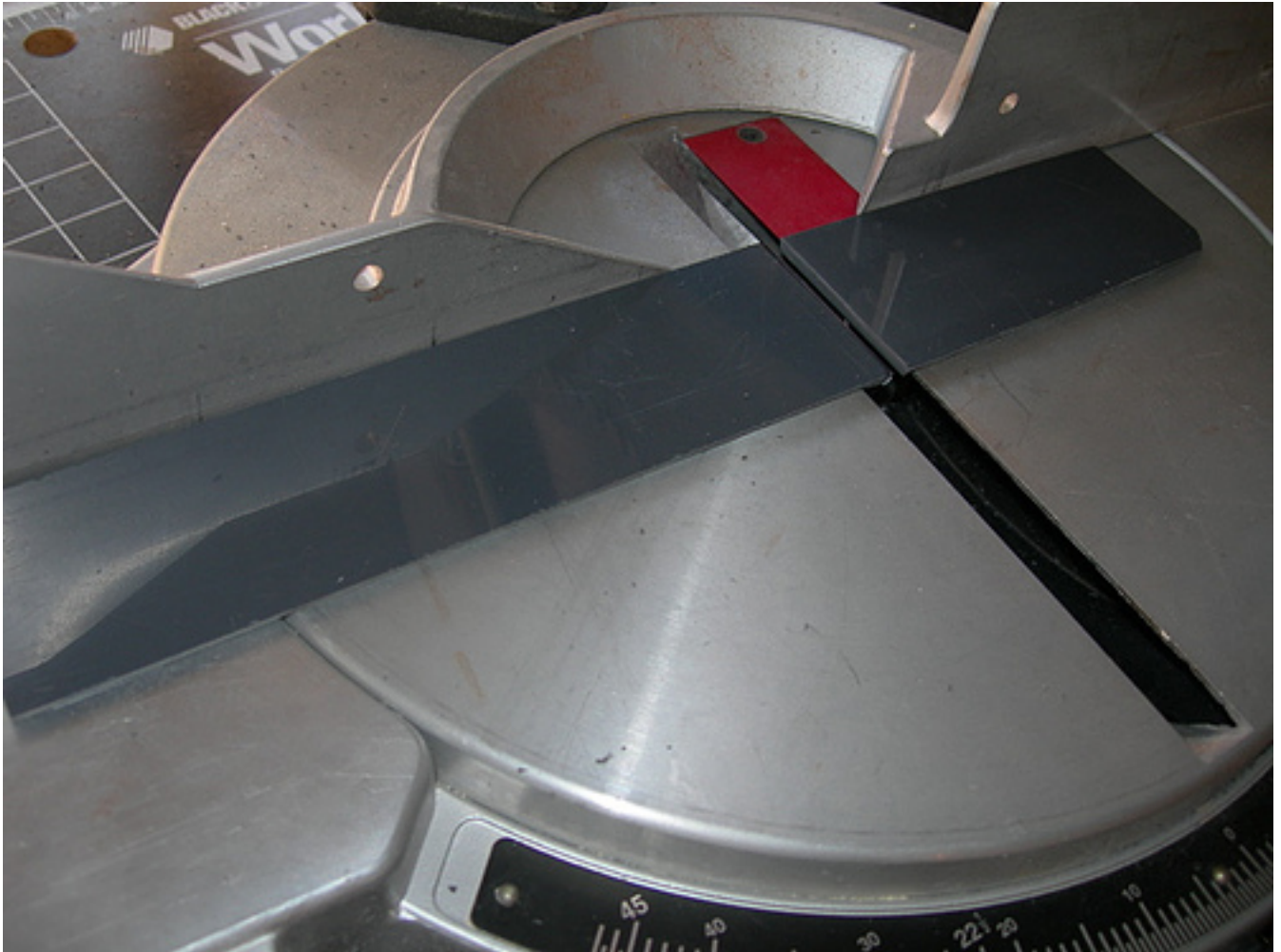
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MONDAY, APRIL 23, 2007

## **Mounting Board for Sound Card, Drilled & Pinned Shaft Adapters, Drivetrain Finished**

Tonight I made a little mounting board for the CFSound III board, so that the enclosure can attach to the inside of my frame.

First, I cut a spare strip of PVC to size.



Then I attached the PVC strip to the enclosure by drilling holes in the strip that match where the pre-existing screws on the bottom of the enclosure go. Now the PVC strip gets screwed onto the back of the enclosure. I also drilled a couple of mounting holes on the ends of the strip, so that I can mount the enclosure onto one of the wooden vertical planks of my frame.

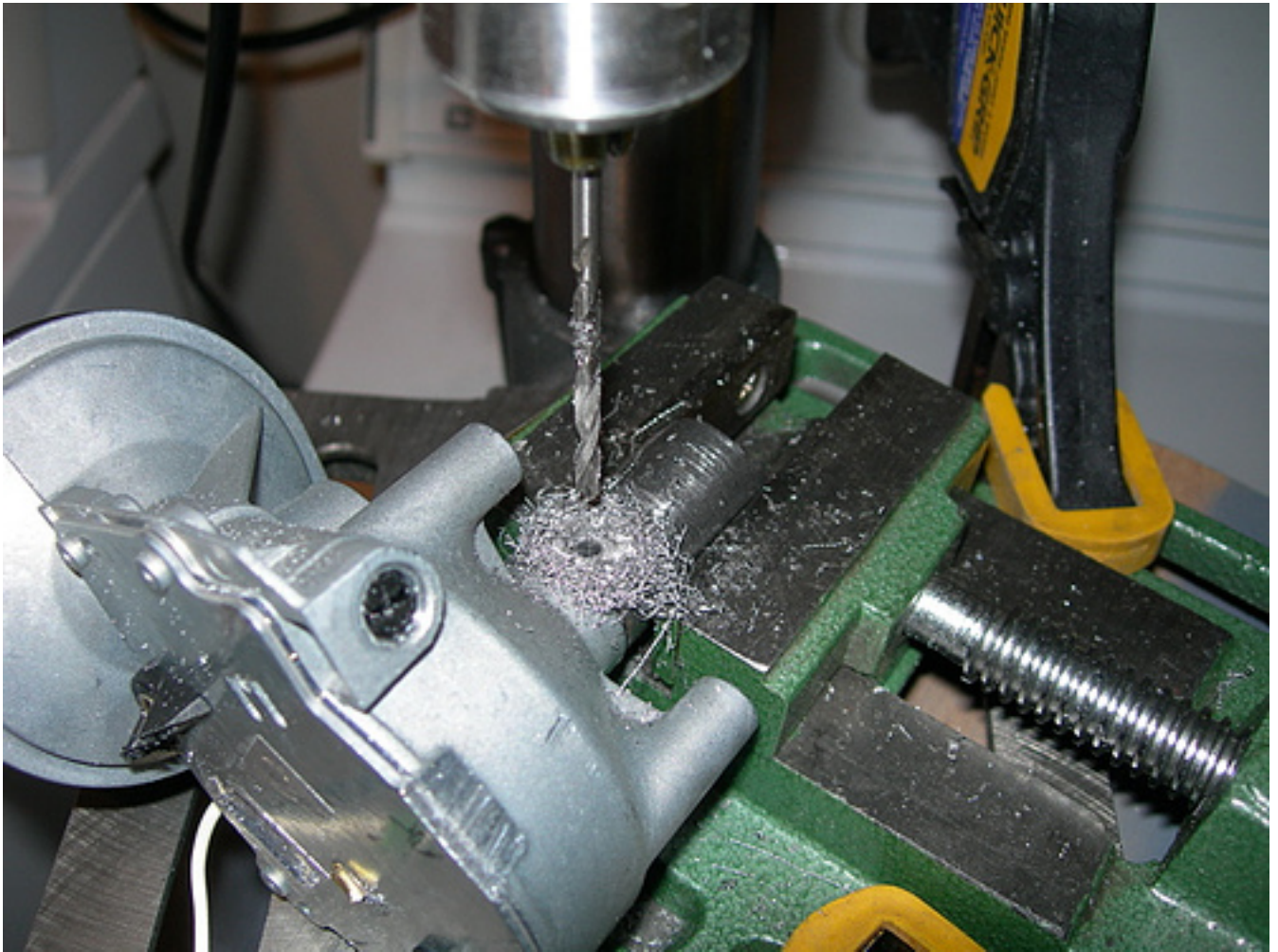


Next came a part of the drivetrain build that I had been fretting over for quite a while, the drilling and pinning of the shaft adapters to the Saturn motor shafts. It turned out that I had nothing to worry about, it was not as hard as I thought it would be.

I clamped down the shaft adapter in my drill press vise, and then secured the vise to the table. When I was sure that the drill bit was ready to go dead-center through the shaft adapter and shaft, I fired up the drill press and slowly drilled a 1/8" diameter hole through it all.







I got the hole just where I wanted it, toward the very bottom of the shaft adapter, near the thickest part of the motor shaft, and right through the middle.

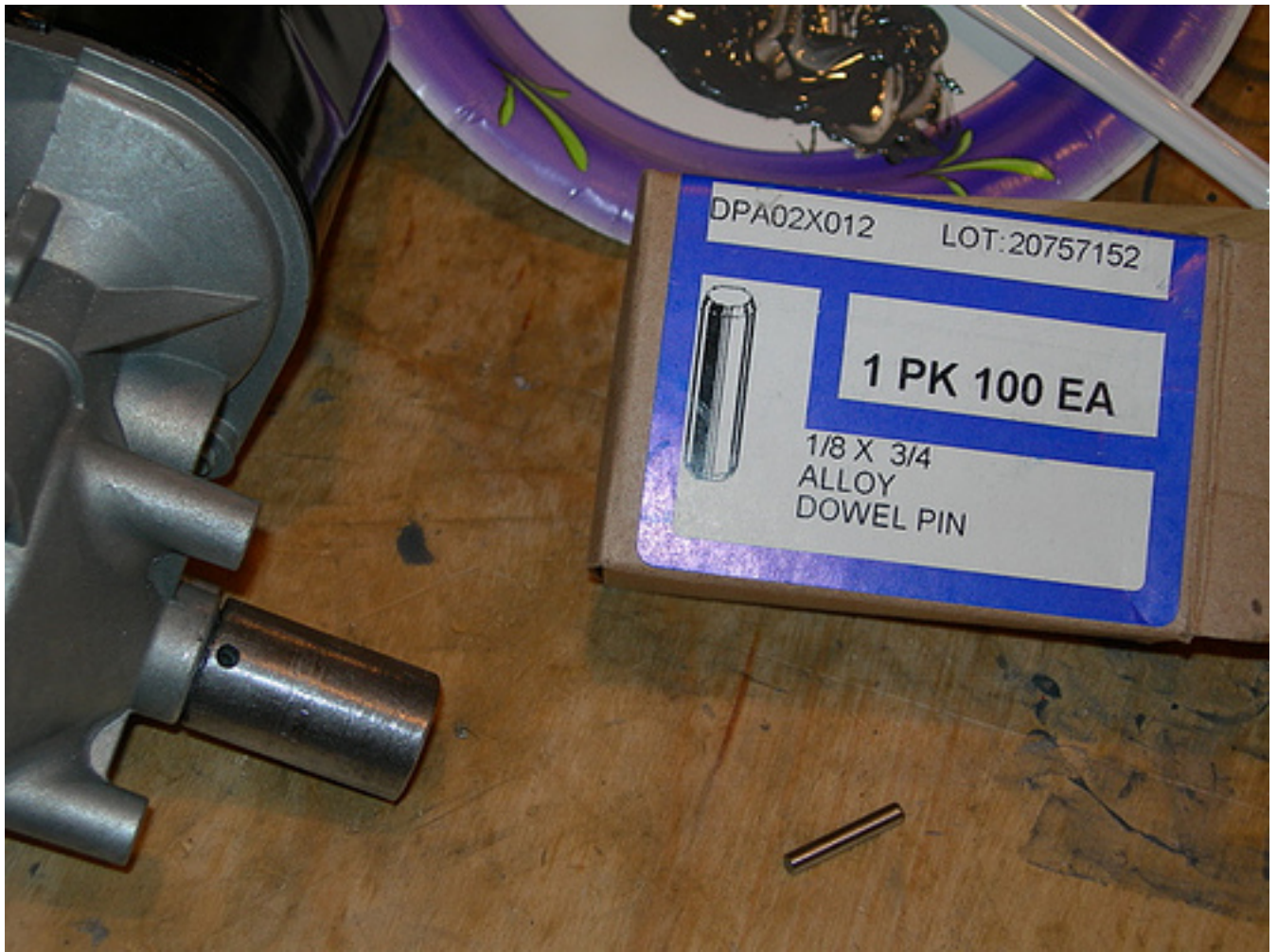


In all, I drilled the two foot motor shafts, and the dome drive motor shaft. I still need to drill another hole in the dome drive shaft adapter to secure the dome drive scooter wheel to it. I'll deal with that soon.

Next, I JB Welded a 3/4" long, 1/8" diameter steel pin into each hole. The steel pins are from McMaster-Carr, and only come in quantities of 100. The pin will secure the shaft and shaft adapter together, so that the two won't shear when the motor torque kicks in.

It's important to secure the pin to the thickest part of the motor shaft, as the threaded area of the shaft has been shown to be too thin and/or weak to handle the stress when running the motors at 24 volts.







And with that, my scratch-built Heath & Alex drivetrain is *done*! I'll put it all back together again once the JB Weld has dried.

*posted by Victor Franco at 11:18 PM* [3 COMMENTS](#)

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TUESDAY, APRIL 24, 2007

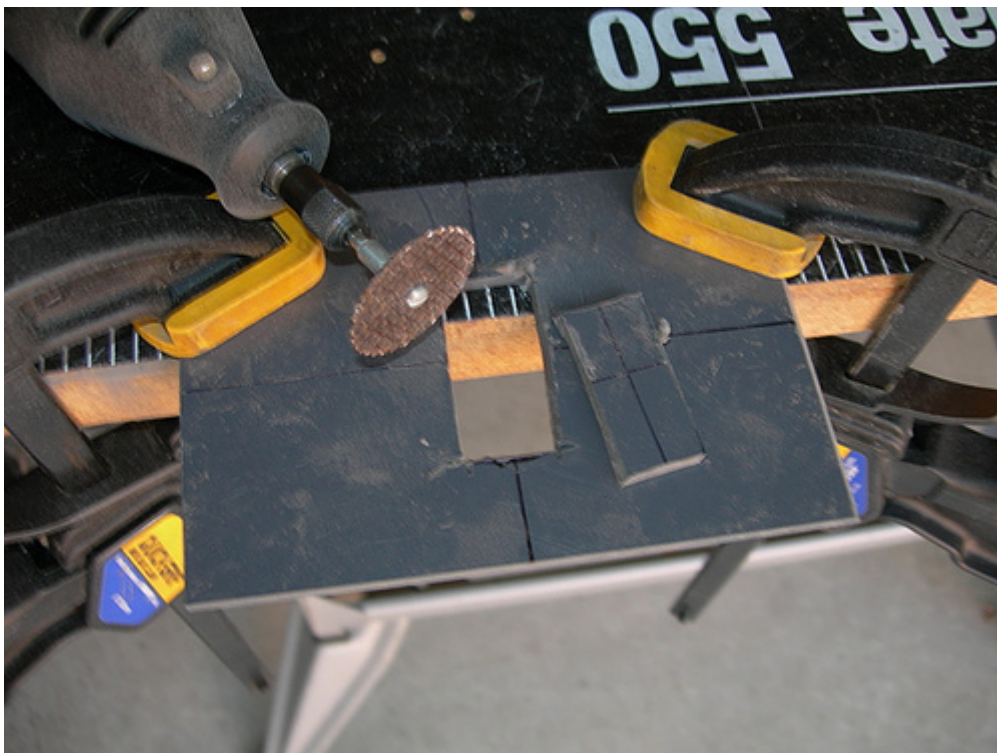
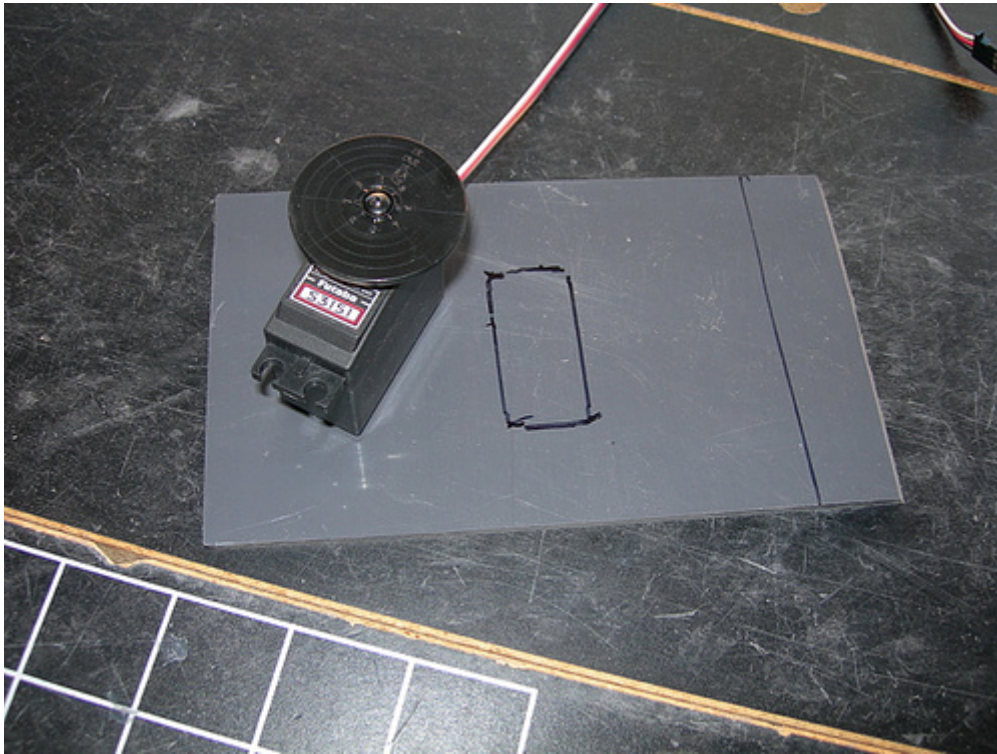
## Started Dome Servo Mounting Plate, Trimmed Foot Shells for Drivetrain Gears, Removed Some Door Holders, Drilled and Pinned Dome Drive Wheel

Today I worked on an eclectic set of droid building tasks.

First, I started working on a mounting plate for the servo mechanism that will trigger the spinning of the dome. The mechanism's workings will become clearer over the next day or two, but this particular piece will house a servo.

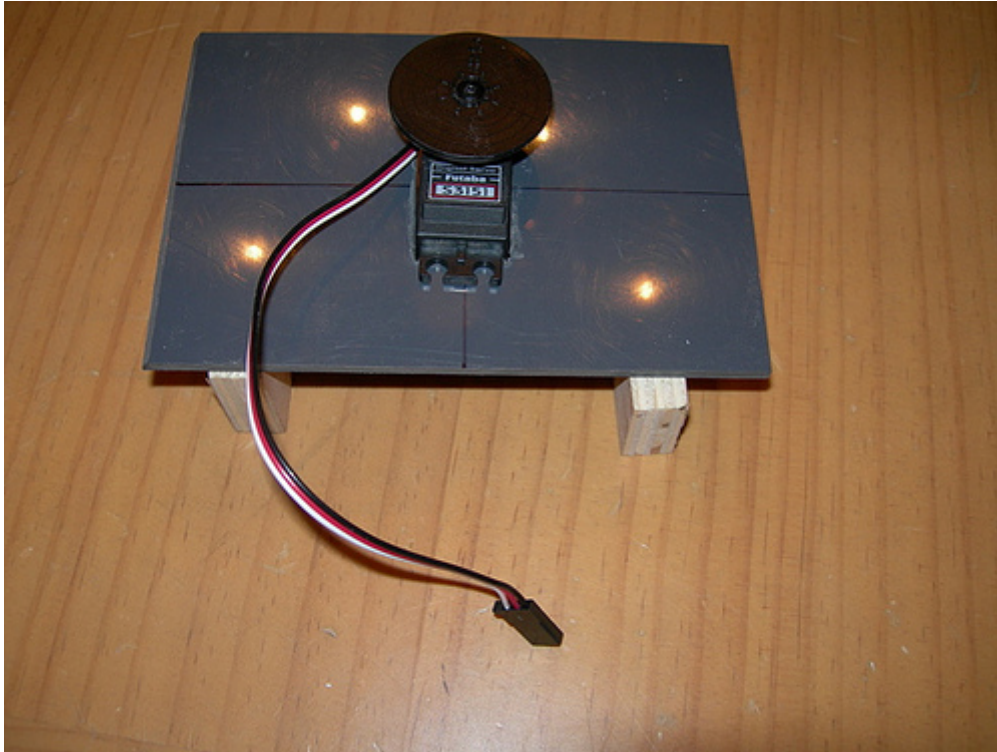


First I traced the servo outline on the PVC mounting plate, and then I used the Dremel with the cutoff wheel attachment to cut out the rectangle.

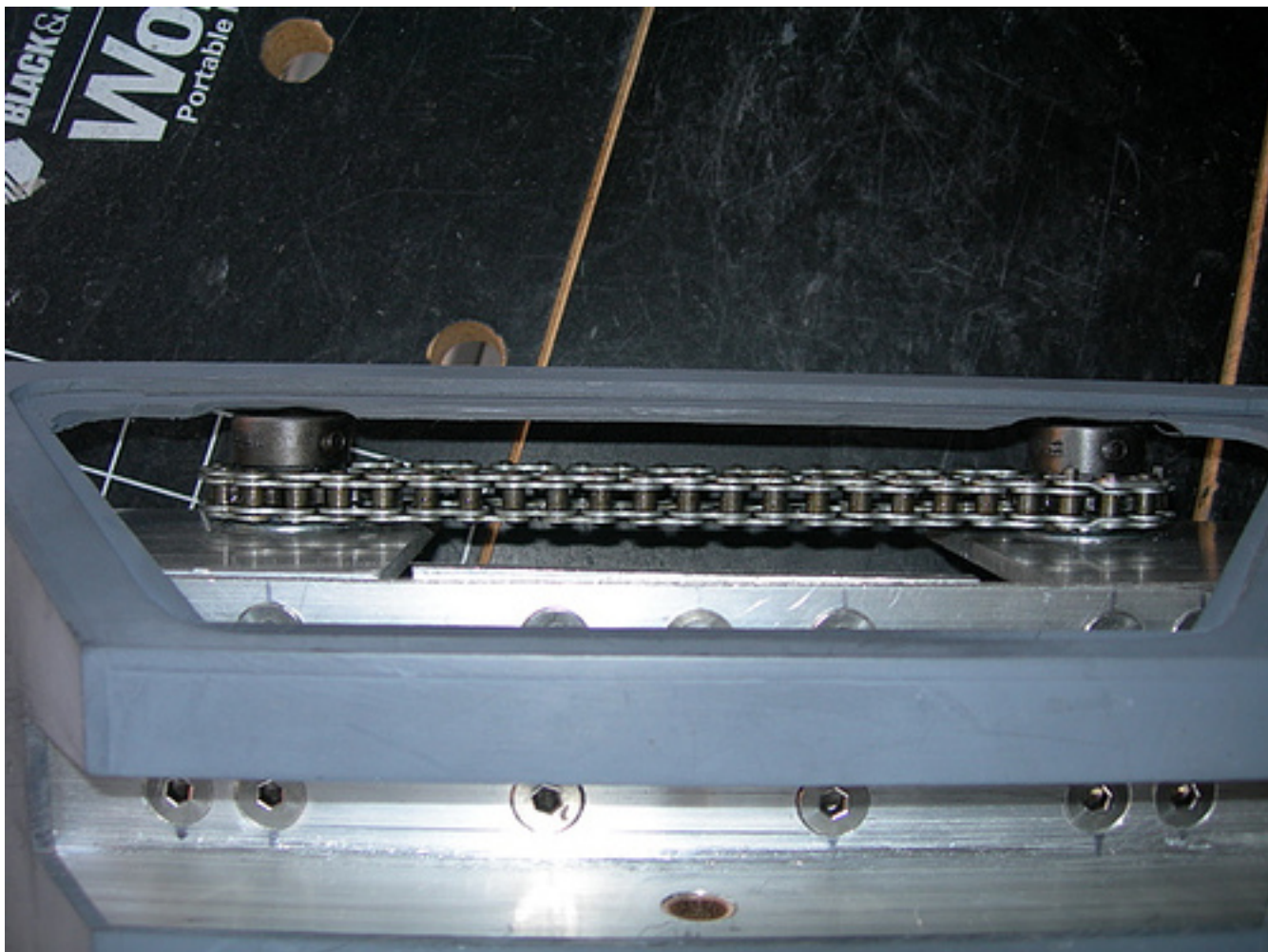




The servo fits in just right. This will be mounted to one of the vertical wooden planks in my frame.



Next, I returned to the foot shells. When I installed the drivetrain chain the other day, I had to move a couple of the gears on each foot outward, causing them to interfere with the foot shells. I was able to trim a small amount of material from the inside of the foot shells with the Dremel drum sander, and now the gears fit inside the foot shells with a small amount of clearance.



I needed to remove the two bottom door holders on the back of each outer foot shell door, as these also interfere with the gears. I didn't consider the positioning of these very carefully when I first installed them. So I trimmed the holders off with the Dremel drum sander. Once I got down to the last sub-millimeter, I could just peel the rest off. I'll recut and reglue some new ones in better locations on each outer door shortly.

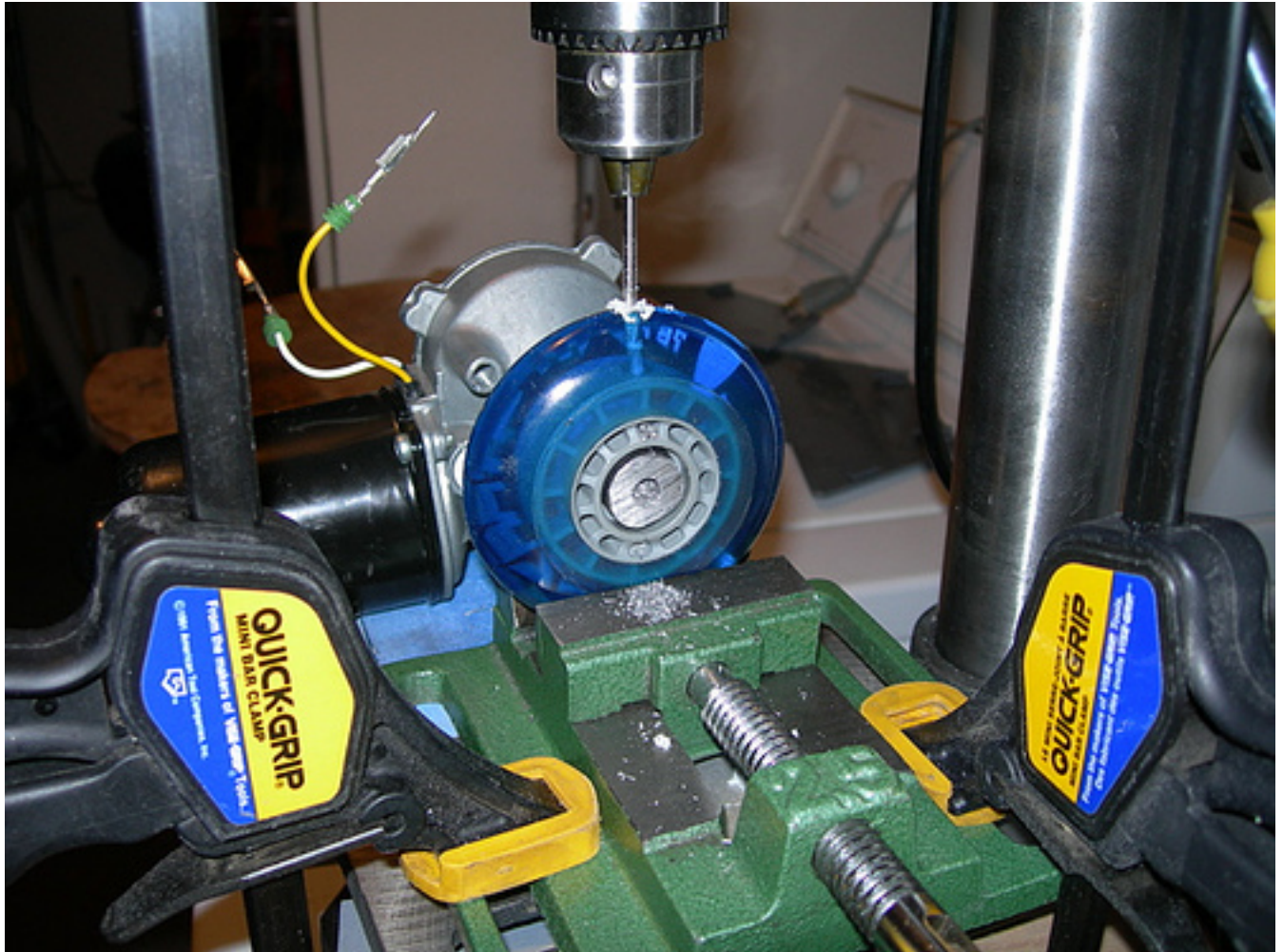


Finally, I wrapped up by pinning the dome drive scooter wheel to its shaft adapter.

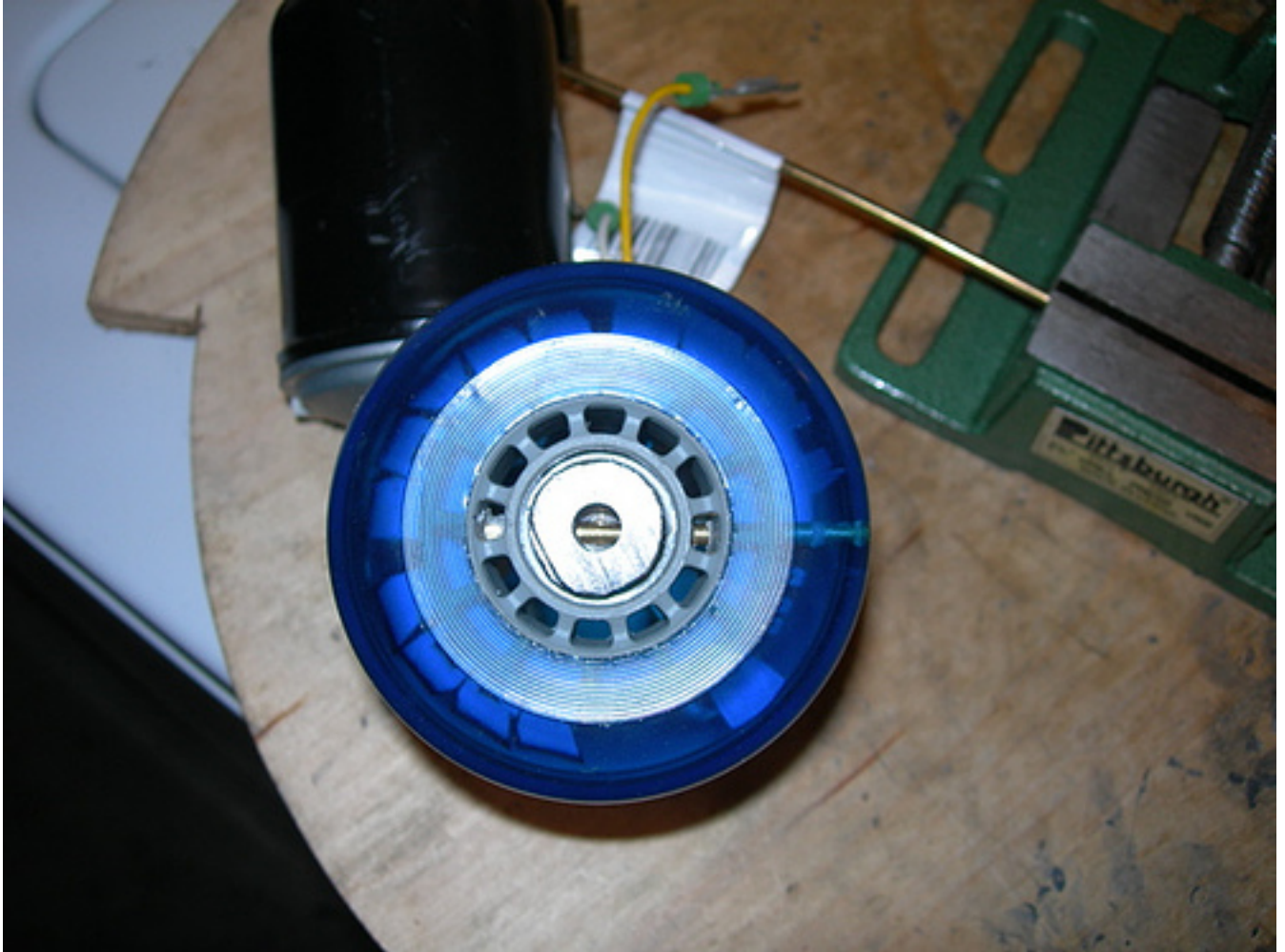
A while ago I had drilled a hole into the wheel, and pushed some 1/8" diameter rod through to act as a set screw. I was able to pull that out and recycle the hole.

This time I drilled through the wheel and shaft adapter, much like yesterday's exercise.





Then I cut a new section of 1/8" diameter rod, and pushed it through the hole, pinning the wheel to the shaft adapter.



I need to do a little drum sanding on the wheel to ensure that there is zero wobble as it spins, and I need to install the spring that pulls the dome drive wheel into the Rockler bearing. Then the dome drive itself will be done.

*posted by Victor Franco at 11:07 PM* 0 COMMENTS

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WEDNESDAY, APRIL 25, 2007

## Goofed Up Dome Drive Wheel, Sanded Down Foot Shell Door Backs, Built Receiver Battery Housing, Attached Battery Boxes

Another day of variety.

First, I attempted to smooth out the wobble of my dome drive wheel ("attempted" should clue you in on where this is going). I clamped the motor in a vise, and held the Dremel with the drum sander next to the wheel, and fired up the Saturn wiper

motor. The idea is that as the wheel turns and wobbles, the Dremel shaves some material off of the wheel, making for a smooth edge.



Unfortunately, my results were not so great. The wheel still has a slight wobble, and even worse, when I tried the wheel out with the dome drive on my R2, the wheel did not grab and spin the Rockler bearing consistently. I'm not sure if I can salvage this wheel. If not, I do have another identical, untouched wheel I can use, and I have already verified that I can remove the current wheel.



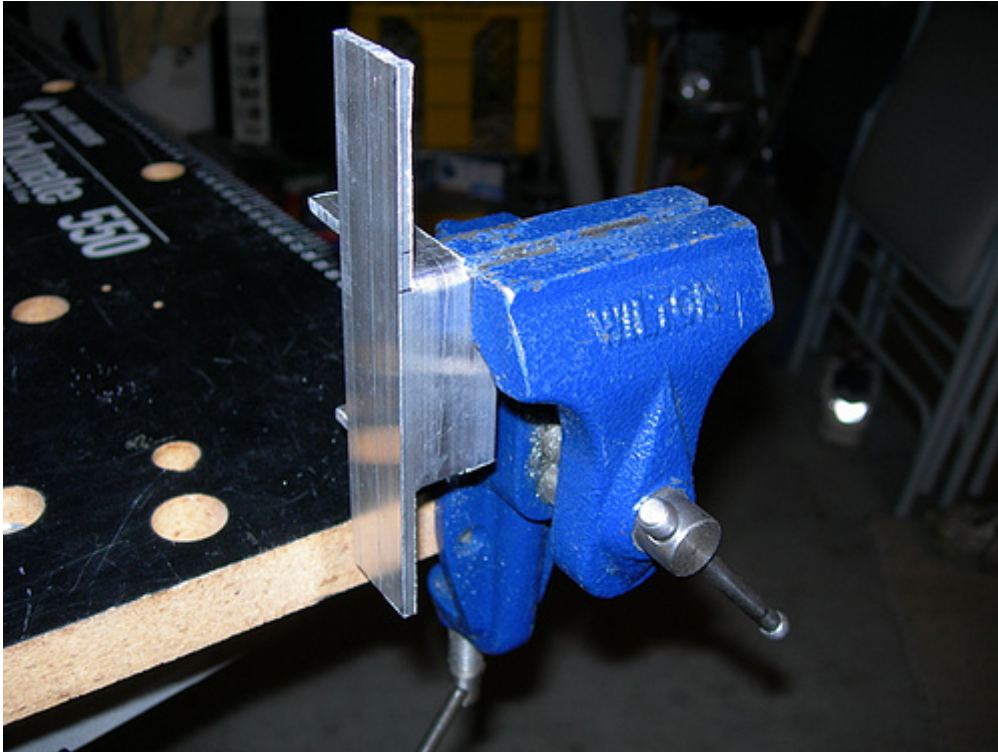


Mike had commented that the gears might bump into the inside of the foot shell doors, so while I had the Dremel out, I trimmed a little material off of the back of the doors, near where the gears are. I'm pretty sure the gears won't hit the doors now.



Next, I sawed and bent some aluminum angle bar to form the remote control receiver battery holder.





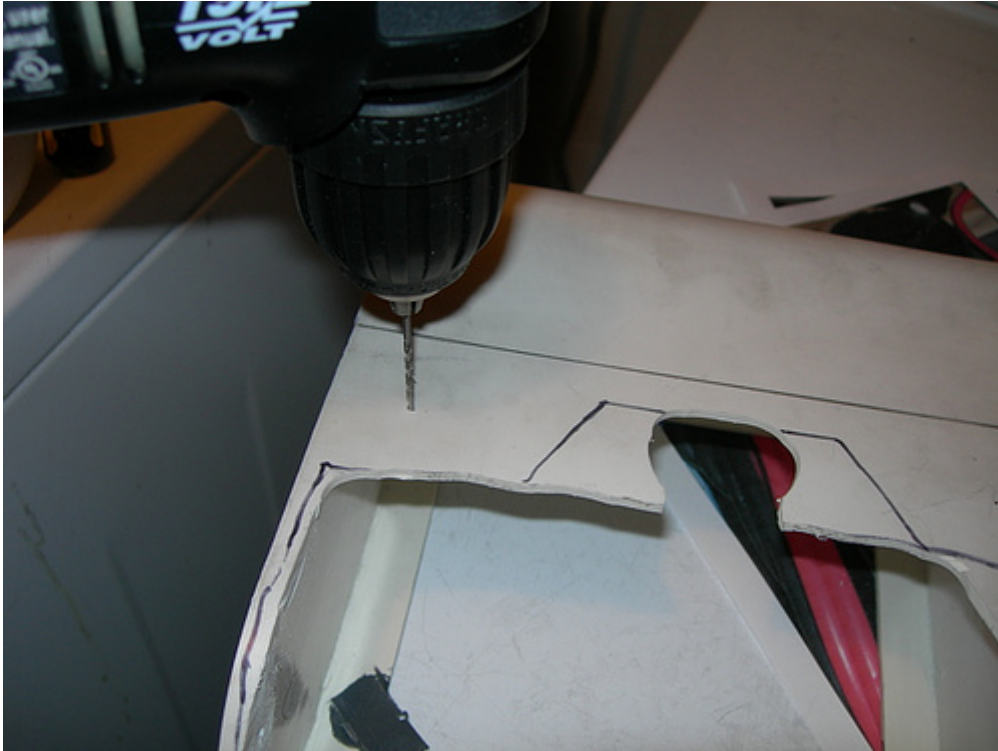
There will be an additional bar that goes across the front of the battery to keep it in place. This will be attached to the inside of my wooden frame.



Finally, I wrapped up by attaching the battery boxes to the foot shells. I drilled



small pilot holes in the battery boxes.



Then I used wood screws with a long thread on them (not sure how else to describe them), to attach the battery boxes to the foot shells. The drivetrain still fits just fine in both shells, although I took the right foot's drivetrain out of the shell.



*posted by Victor Franco at 11:43 PM* [0 COMMENTS](#)

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THURSDAY, APRIL 26, 2007

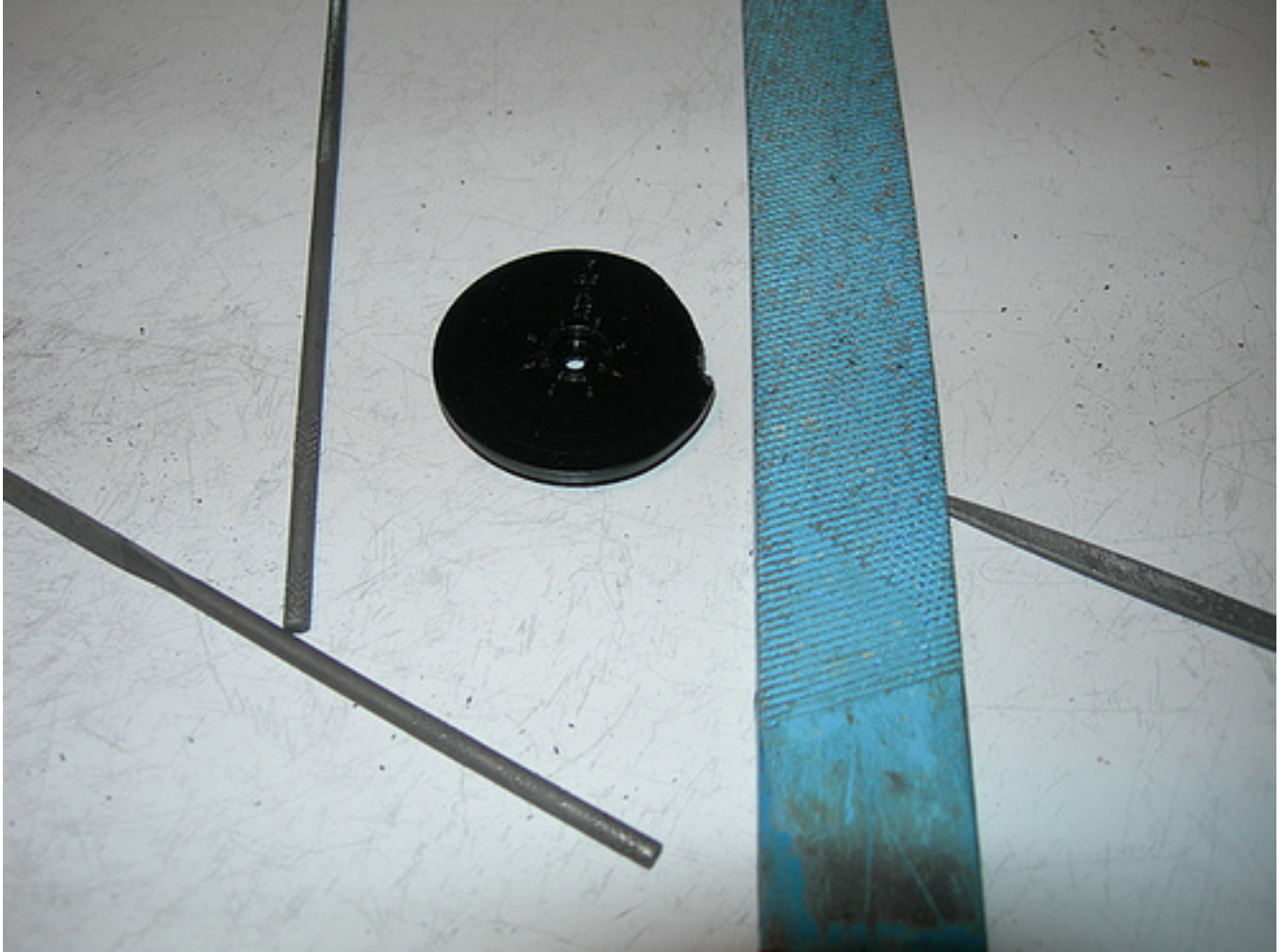
## **Roy's Leg Pipe, Started Working on Dome Drive Servo Mechanism**

Roy Powers dropped by for a while, and he got to experience the joy of drilling through steel pipe. He needed to use my drill to get started drilling the holes in the steel pipe for the bolts that hold his R2's legs together. There's an inner and outer pipe that were drilled.

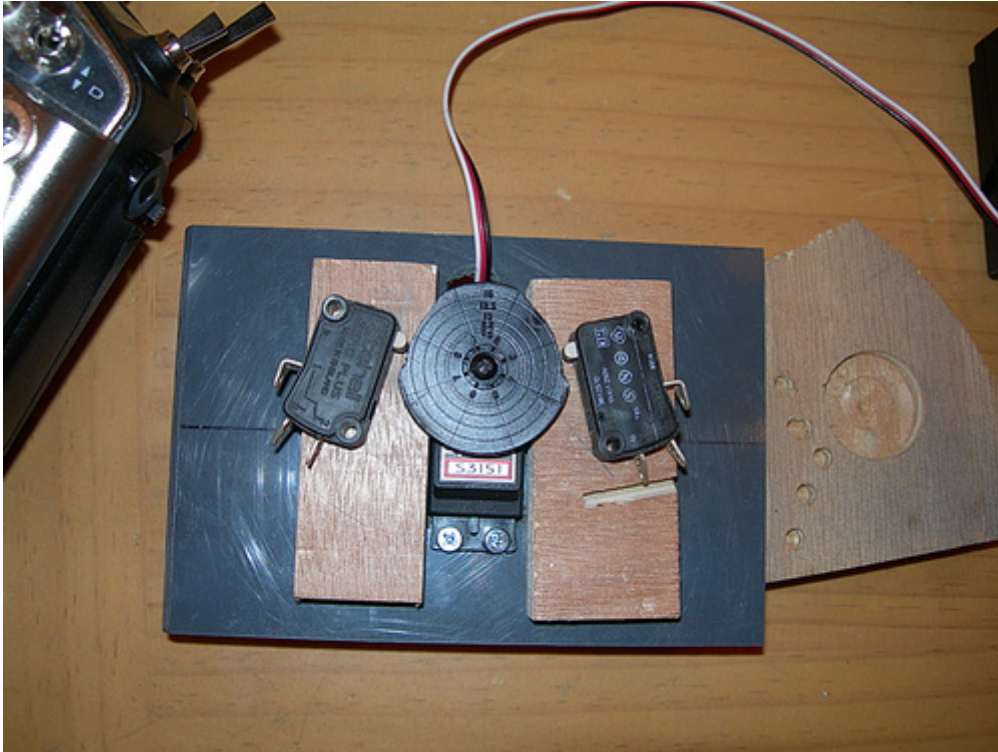


Meanwhile, I finally got to work on the servo mechanism for my dome drive. I started by filing some material off of the servo horn disc.





I iteratively filed the disc and fitted it on the servo, and used the remote control to turn the servo clockwise and counterclockwise. As the disc turns, it bumps into switches that will cause the dome motor to turn one way or the other, depending on which way the servo rotates and which switch (left or right) the disc hits as it rotates.



I removed a greater amount of material from the top of the disc, so that both switches are never pressed at the same time when the disc pivots. I plan to mount the servo, wooden switch holders and switches permanently to the PVC base tomorrow.

By the way, the dome drive wheel problem from yesterday may be due to the shaft adapter bumping into the frame. I'll Dremel a little more material from the frame and see if that solves the problem.

*posted by Victor Franco at 10:44 PM* 0 COMMENTS

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FRIDAY, APRIL 27, 2007

## Widened Dome Drive Groove in Frame, Finished Dome Drive Servo Mechanism

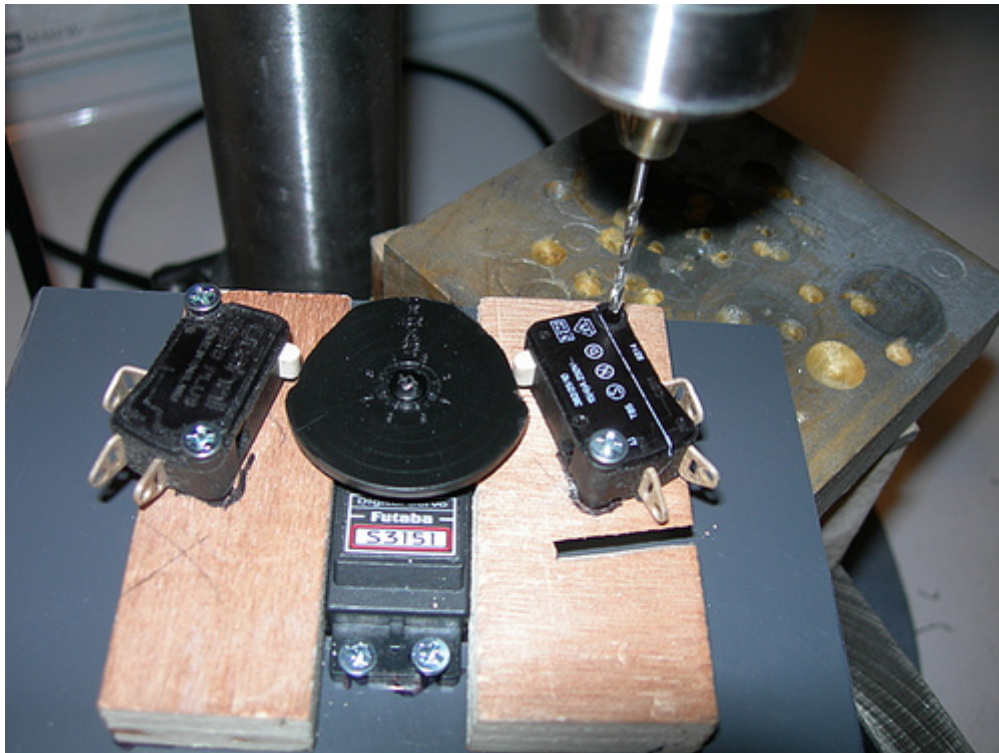
Tonight I fixed the problem with the dome drive wheel not grabbing the Rockler bearing as it spun. Sure enough, because I trimmed some of the edge off of the wheel to keep it from wobbling, I needed to bring the whole assembly closer to the bearing. The problem was that the shaft adapter was running into the groove in the frame that was meant to allow access to the bearing. So I widened the groove and now the dome drive works as it should.



Next, I finished up the servo mechanism that will trigger dome rotation.

I attached a couple of wooden blocks from behind with screws onto the PVC servo holder. Then I drilled pilot holes and screwed down the switches that will be bumped by the servo horn disc. The switches will be wired up to the dome drive motor.





Now, when the left stick on the remote is centered, neither switch is pressed.



When the stick is pulled to the left, the servo rotates and bumps the left switch.





When the stick is pulled to the right, the servo rotates in the opposite direction, and bumps the right switch.



Tune in again tomorrow, there may be some interesting developments.

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*posted by Victor Franco at 11:54 AM* 0 COMMENTS

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SATURDAY, APRIL 28, 2007

## First Steps

R2 took his first steps today. Here's the tale of how the day went.

I got to Mike's around 10:00am, William Miyamoto joined us a short time later, and Roy Powers also dropped by for a while and lent a hand. My main function was to stay out of the way as much as possible and operate the video camera, as we were shooting the wire-up for a DVD tutorial.

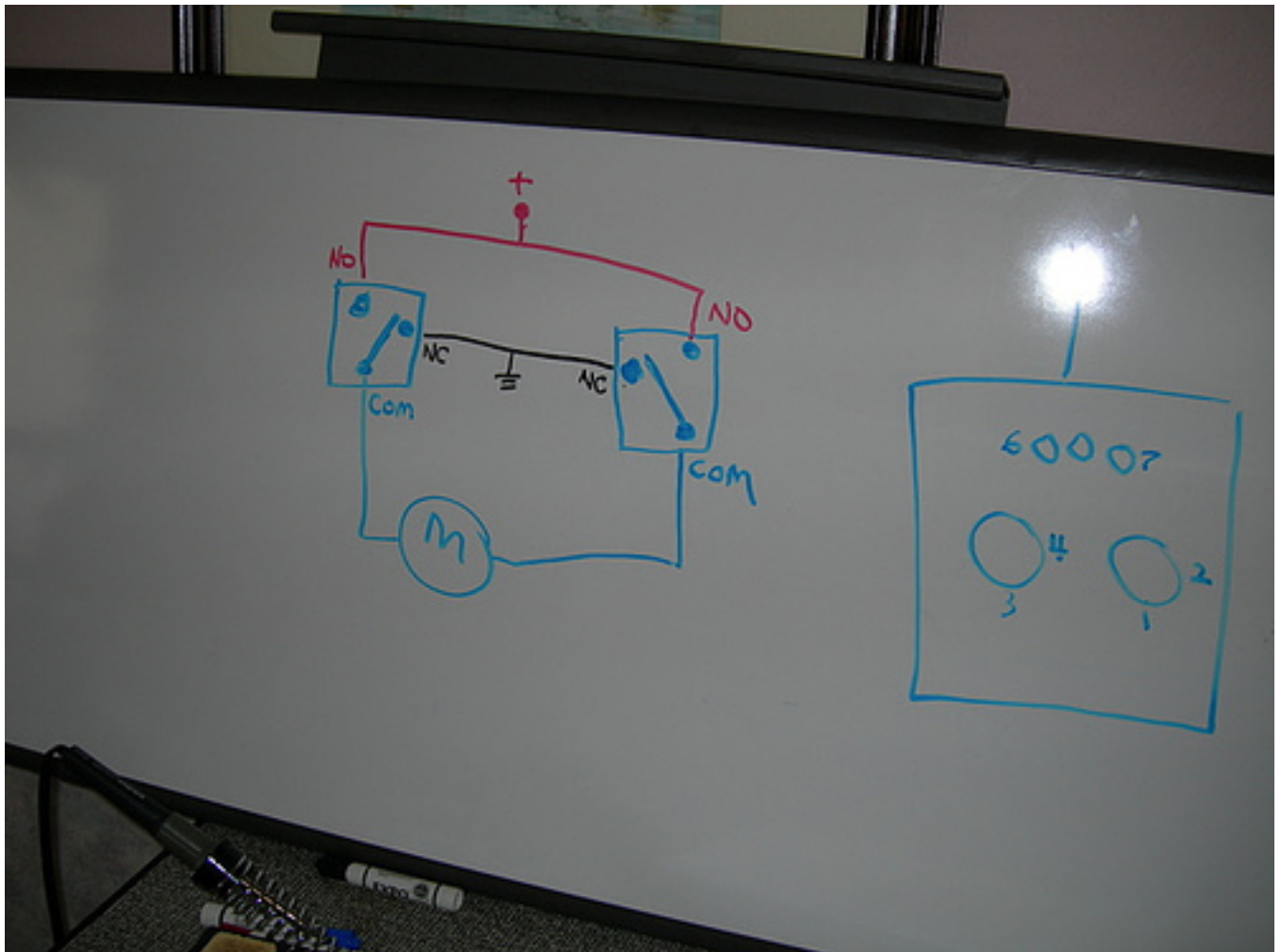
Mike and William worked on wiring up the Saturn motors.



Meanwhile, Roy tinned up some of the data lines for the sound card.



Part of the DVD tutorial included some whiteboard explanation. Mike explained radio control basics, and later diagrammed how the dome motor controller worked.



We had a late lunch break (around 2:30pm) and wolfed down pizza before returning to work.





I got into the act every once in a while, mostly hacking aluminum and drilling pieces here and there. I also wired up the data lines for the sound card, and there are a lot of connections to make (32 total, 16 on the Vantec Keycoder, and 16 on the sound card).



Mike added parts to the frame as we went along. The receiver, main receiver battery, and the backup receiver battery were installed, along with the dome motor controller.

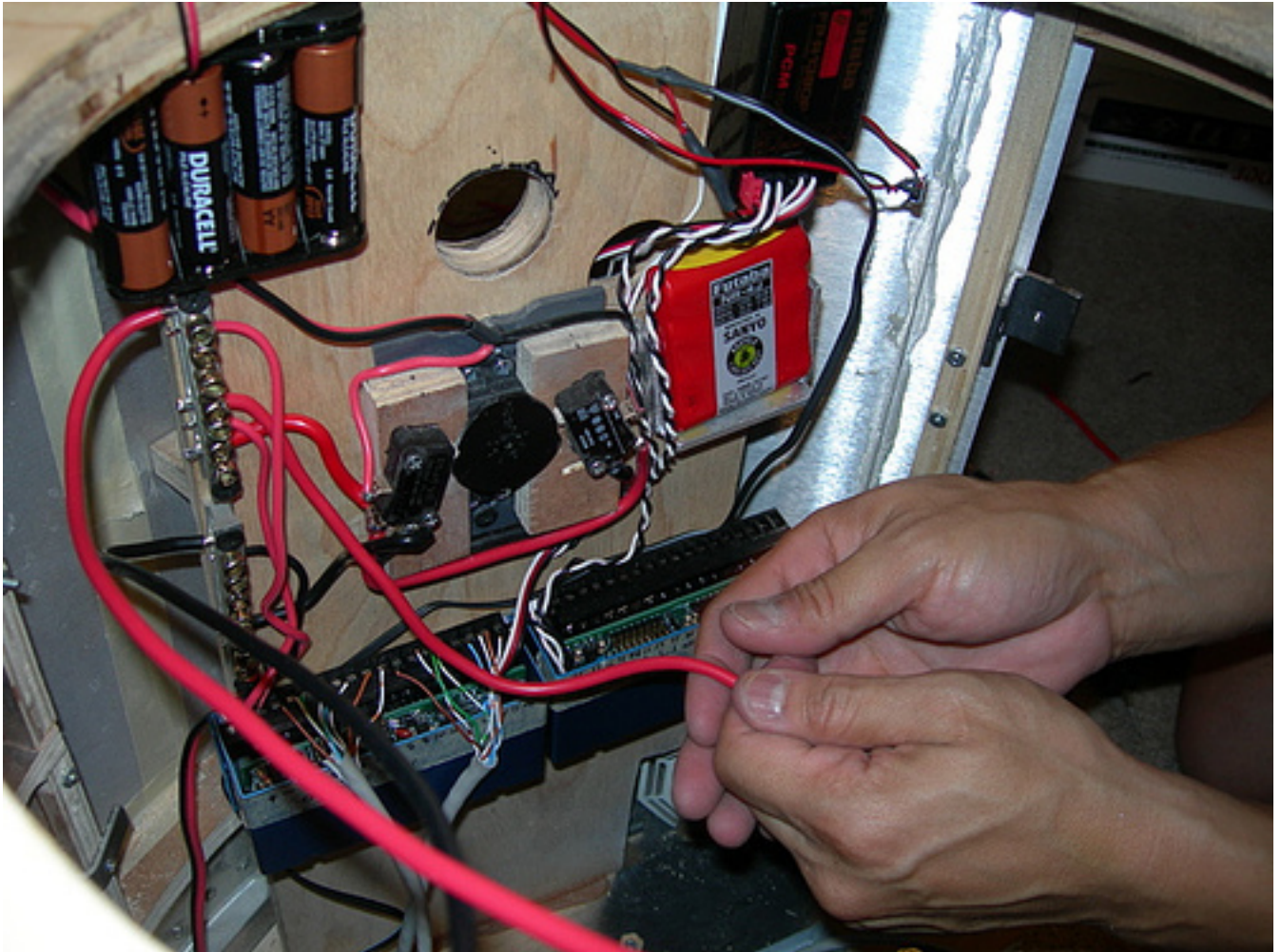




Mike and William soldered up battery connectors and other wiring.







After a lot more work, it was finally time to try out R2. We powered up the receiver, main power and transmitter. The first thing I tried was the dome motor. It worked! Well, it worked backward, but it worked. William made some adjustments on the transmitter that reversed the behavior, and fixed things so that the dome motor turned properly. We could have swapped how the wires were connected on the dome motor, but this was easier.





Next, I moved R2 forward. As with the dome motor, we had a connection that wasn't quite right on the speed controller. A quick swap of a connection, and R2 was moving like he should! I was all smiles.





No video to share yet, but I should have some in the next day or two.

The bad news: We blew up the CF Sound III card. We accidentally hooked it up to 24 volts, which is more than it can handle. I'm pretty sure the card is dead. I'll get a replacement some way or another. Oh well. If that's the worst thing that happens, I'll be a happy man.

R2 will spend the night at Mike's house, it was too late to tear him apart and pack him in the car by night's end. I'll pick him up Sunday and bring him home.

Thank you Mike, William, and Roy, for getting R2 that much closer to a dream come true!

*posted by Victor Franco at 10:55 PM* [5 COMMENTS](#)

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SUNDAY, APRIL 29, 2007

## Second Steps

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A little more of the same from yesterday, but that's a good thing.

I went back to Mike's to pick up R2 and bring him home. While I was there, Mike kindly wired up my batteries so they can be easily connected to the inside of R2's power bus, and he also wired up my battery chargers to hook up to the batteries. In addition, Mike installed the main circuit breaker, which should trip before the fuses on each battery pack ever get hit.

A short video of R2's second day of locomotion is available at:

<http://pw2.netcom.com/~artoodetoo/R2sFirstSteps.html>

Mike piloted the controls for that small shot, he knows what he's doing. In the few minutes that I've had the stick, I've proceeded very cautiously.

(If you can't hear what was said toward end of the video and are wondering what we discussed, Mike asked if I had tightened down the bolts on the drivetrain. I replied, "Not really... not with a wrench. The feet may fall off in the middle of this.")

I brought R2 home, and later in the evening I put him back together. I'm charging up the batteries for about 20 hours before running R2 again.

I also spent all of five minutes recutting bottom door holders, I'll glue them on soon.

*posted by Victor Franco at 11:37 PM* 0 COMMENTS

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MONDAY, APRIL 30, 2007

## Right Motor Troubles, Glued Down Door Holders

When I powered R2 back up tonight, his right motor was not moving. After some troubleshooting, I determined the problem was with the motor itself. I removed the motor and applied 12 volts to it. As I rotated the motor case around in my hand, the motor would occasionally engage. That made my 24 volt conversion inside the motor my primary suspect.

I opened up the motor, and it seemed as though the solder joint was somewhat loose, so I resoldered it. A few minutes later when I reapplied power, I saw a tiny spark from under the motor's circuit board, and the motor was history. I don't know why that happened. I'm slowly frying my droid, one part at a time.

The big bummer of all this is not so much that the motor is trashed, but that it meant all the work I did on the shaft adapter was wasted, since the shaft adapter is JB Welded to the motor shaft. So I had to grab another shaft adapter, open up the base to fit the profile of the motor shaft, and JB Weld it onto a new motor. I'll

pin it tomorrow, after the JB Weld has dried. (Hmm... maybe I should have tried 24 volts before JB Welding the shaft adapter onto the shaft, eh?)



I also finally got around to gluing down the new bottom door holders on the outer foot shell doors. I'll nail in the pivot pieces tomorrow, and then the foot shells should be ready for a reprime and paint, although I still need to drill some small holes through the top of the outer foot shells, to allow the wires to pass from the legs on into the feet.





*posted by Victor Franco at 11:21 PM* 2 COMMENTS

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TUESDAY, MAY 01, 2007

## **Drilled, Pinned & Installed New Motor, Finished Redoing Door Holders**

This morning I drilled and pinned the replacement motor for the right foot. I'm starting to get proficient at this, which isn't necessarily a good sign.



During the day, I called ACS. I ordered a new sound card, and I will send the old one in for repair (minimal or no charge). I'll find something to do with the second card, or I can always sell it someday if I don't need it.

In the evening, I mounted the motor back on R2, and he works again! Yea.

Matthew Henricks and Roy Powers dropped by to discuss various droid-building matters shortly after R2 was up and running again, so they got to see him in action.

Later, I finished redoing my door holders. The bottom holders on the outer doors were moved a bit to avoid the gears on the wheels. I also replaced the nails that hold the pivot pieces in place, with notched nails that are less prone to falling out.



*posted by Victor Franco at 11:24 PM* 0 COMMENTS

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THURSDAY, MAY 03, 2007

### **Battery Box Primer, Started Tying Down Wires**

This evening I applied three coats of primer to the battery boxes and the doors that were cut from them. I plan to lightly sand them and apply three more coats tomorrow, and then hopefully paint them during the weekend.





I also started tying down the various cables that are running around loose in my droid. I didn't get very far, I've only screwed down three wire clamps. It's a bit tricky working inside of R2 nowadays.



*posted by Victor Franco at 11:05 PM* 0 COMMENTS

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FRIDAY, MAY 04, 2007

## **More Battery Box Primer, More Wire Clamps**

More of the same from yesterday, almost an exact replay.

I lightly sanded the primer on the battery boxes, and then reapplied some new coats in the morning. In the evening, I lightly sanded again. I think another coat or two of primer tomorrow, and they should be ready to paint.



I screwed down three more measly wire clamps in the evening too. Still a few more to go.





*posted by Victor Franco at 10:32 PM* 0 COMMENTS

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SATURDAY, MAY 05, 2007

## **Painted Battery Boxes & Half Moons, Holders for Receiver Battery & Switch, Circuit Breaker, Center Foot Washers, Pipe Clamps, Battery Rails, Switches**

With Celebration IV just over two weeks away and breathing down my neck, I need to get in gear and finish the many details that have to get done.

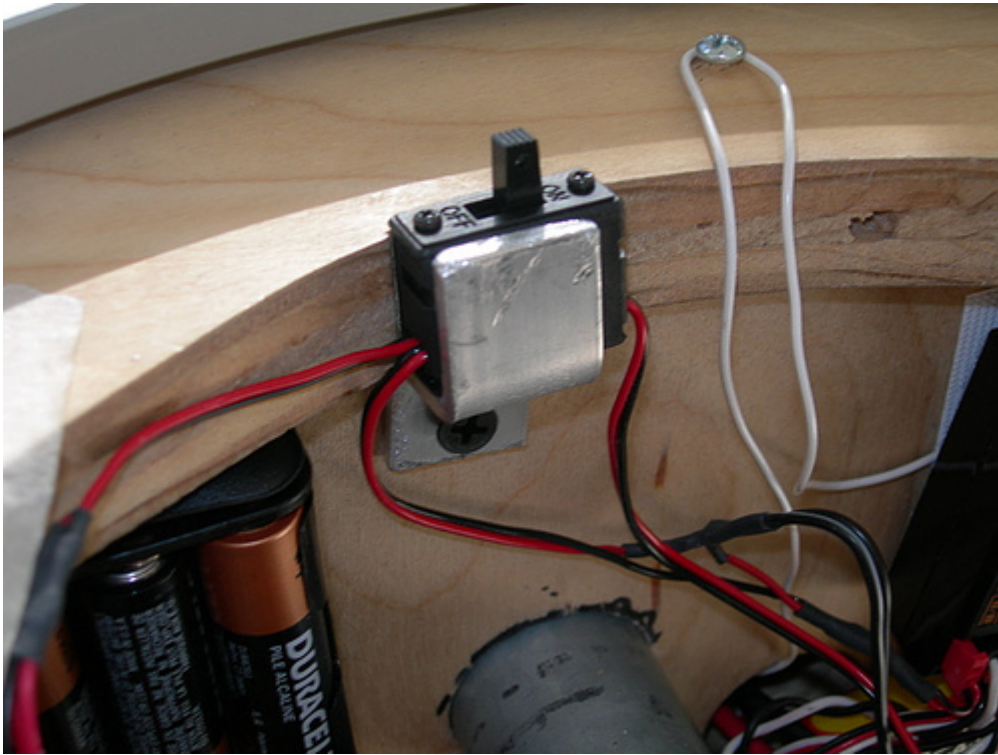
For the first time in a long time, I did some painting. The battery boxes and half moons each got two coats of Rustoleum Satin White today. I may add another coat later on, depending on how these look after they have dried completely.



I cut and bent some aluminum bar to help hold the main receiver battery in place, as well as the switch that determines which receiver battery pack is selected (main or auxiliary).



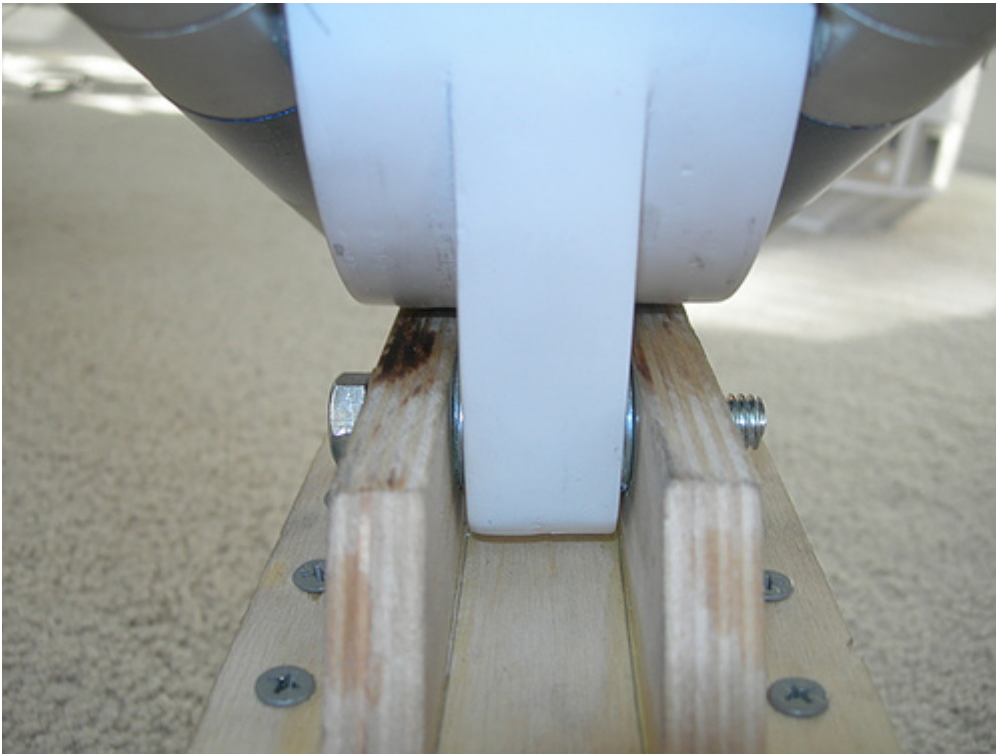




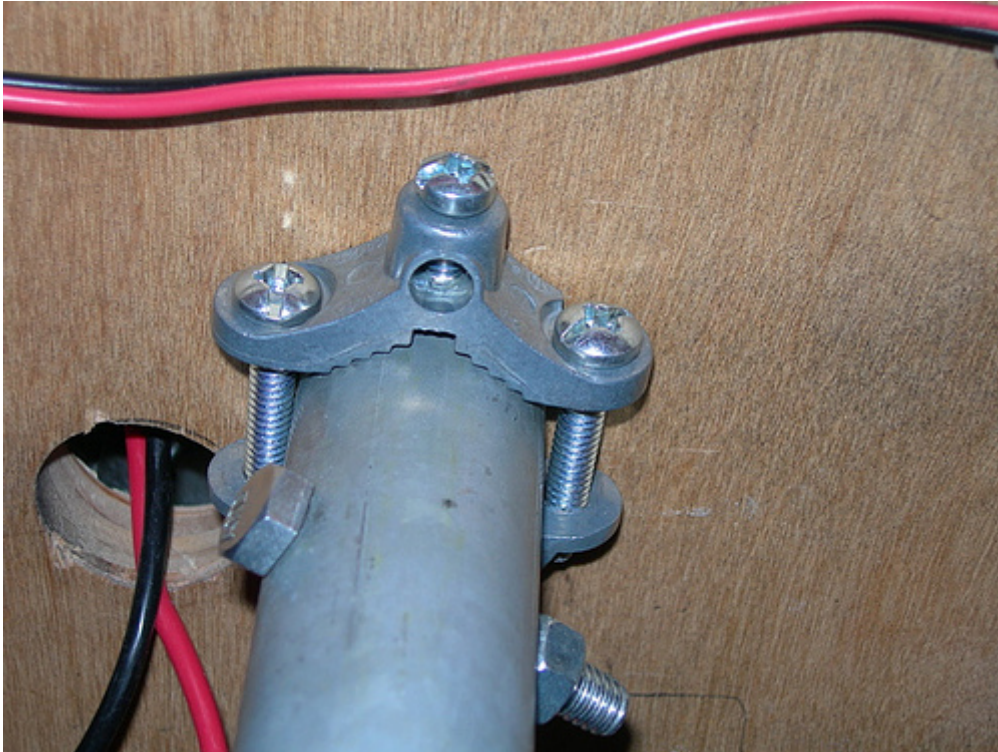
I used Velcro to fasten the main circuit breaker to the underside of the top of the frame.



My center foot needed a couple of washers between the tip of the ankle and the inside of the wooden channel pieces to keep it firmly in place, so I added those today as well.

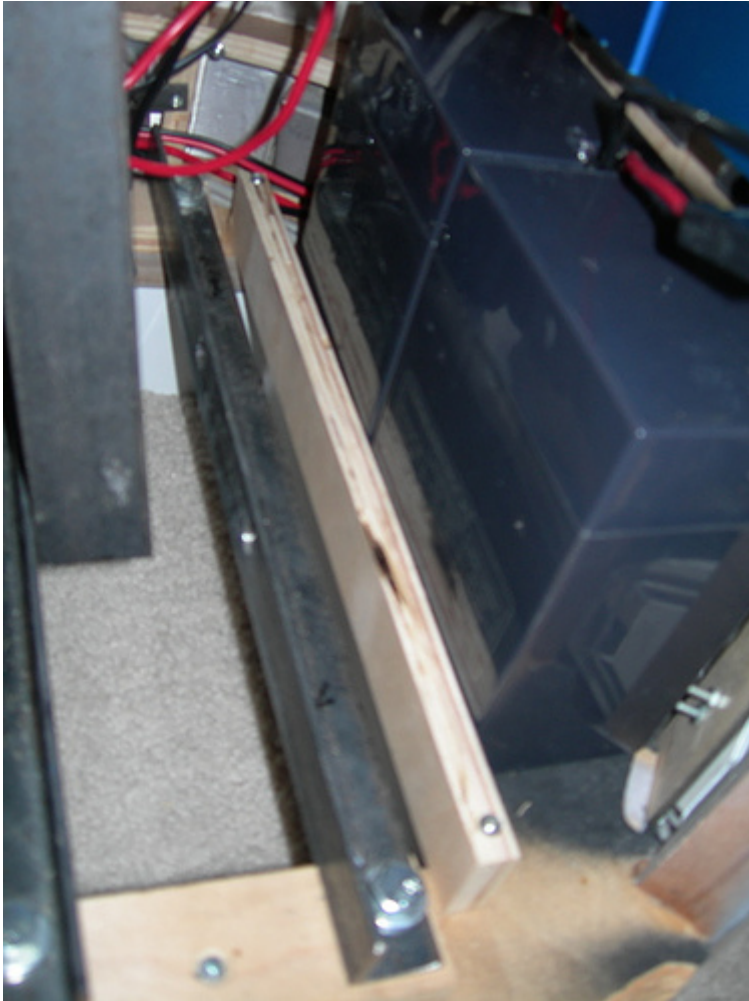


I screwed down gas pipe clamps to keep R2's body centered on the gas pipe. There's one clamp on the left, another on the right.

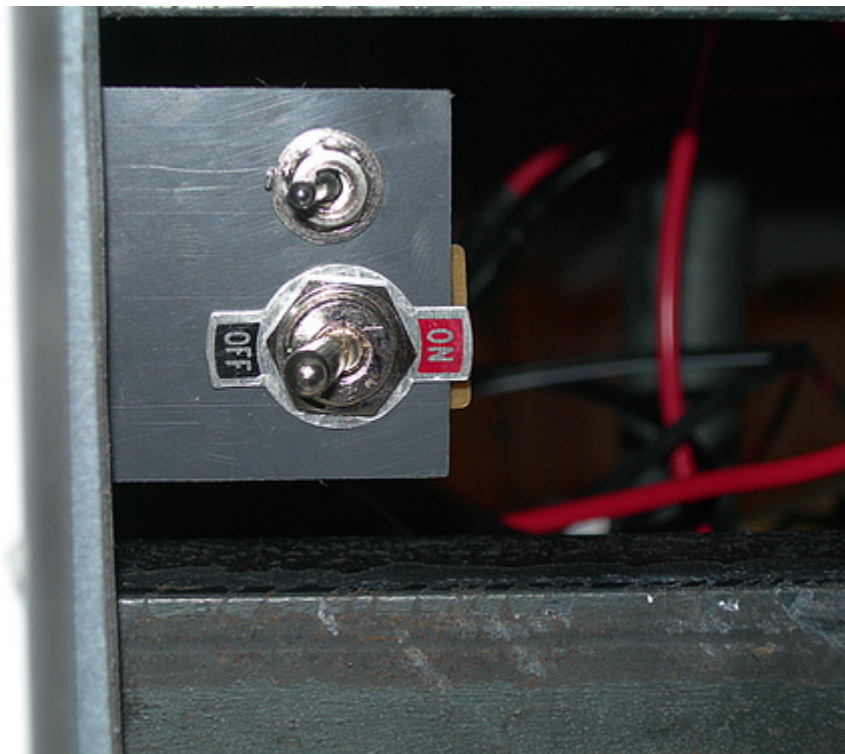
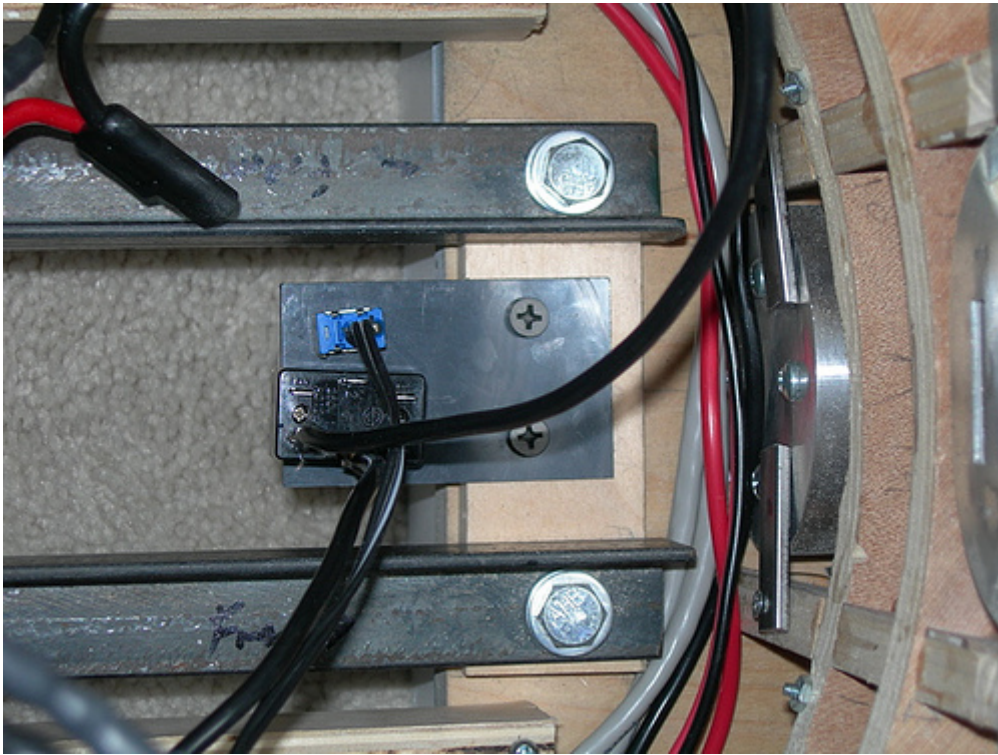


I installed wooden rails to keep the main batteries in place. I still need to cut and install some short pieces toward the rear, to keep the batteries from sliding back when R2 is tilted back.





Finally, I secured R2's on/off switches to a piece of PVC, and attached that to the bottom of the frame, accessible from the front of the skirt. One switch powers up the main batteries, the other switch powers up the receiver battery.



*posted by Victor Franco at 11:35 PM* 2 COMMENTS

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SUNDAY, MAY 06, 2007

## Center Ankle Hacking, Gluing & Stabilizing, Foot Shell Wiring Holes, Finished Battery Railing

I really, really hated to do this, but I had to. I had to hack on the center ankle with the Dremel in order to get the center leg to tilt the specified eighteen degrees. With this hacking, the leg can now tilt up to twenty degrees.

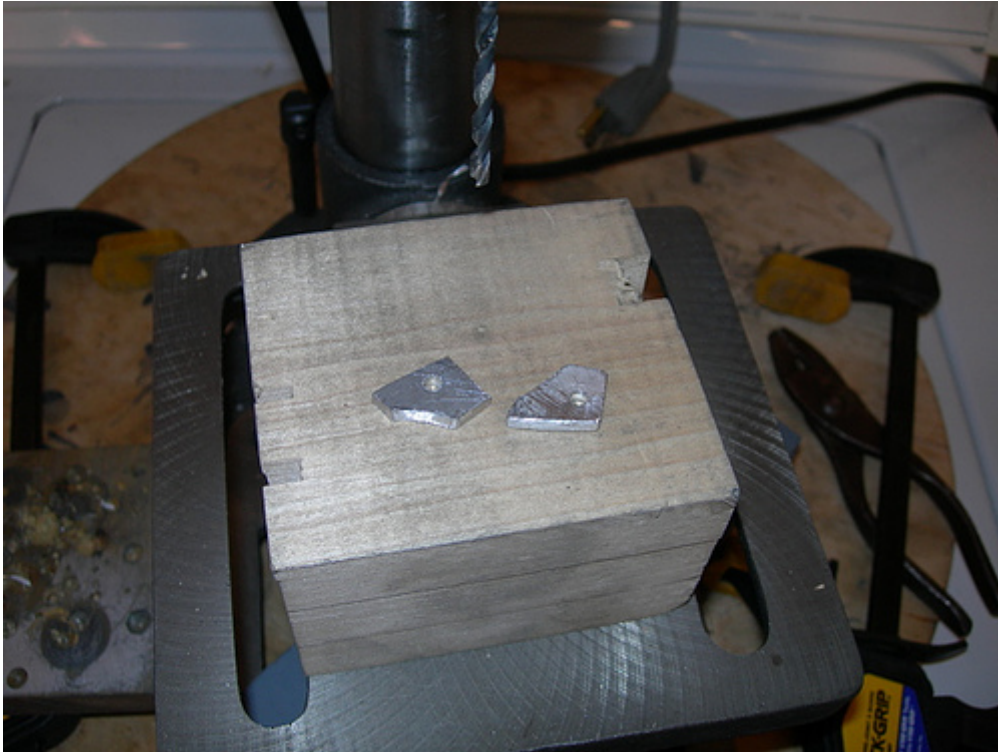
The root cause of the problem is that the ankle bolt hole needs to be closer to the tip. I've done all I can to the foot to get more clearance for the leg tilt, but it still wasn't enough. The curve on the ankle had to be sanded down. I will probably use a paint brush to apply primer and paint. I hated to do this so much that I may rebuild a new center leg some day. The tape-ease cylinder is a pain, but the rest of the center leg is a pretty easy build.

Man, I hated to do this. (Ok, I'm over it. It's in the past now.)



I cut some center foot stabilizers that get screwed onto the center ankle. This way, when R2 backs up, his foot won't jump up like a spooked horse, as it is currently prone to do.





I used Krazy Glue to glue affix the washers from yesterday for the center foot, to keep it stable when bolted to the ankle. This eliminates any wiggle room. I didn't know if this would actually work, but so far the washers are holding tight.



One last cut on the outer foot shells, as I opened up a small rectangle with the Dremel and drill to allow wiring to pass from the ankle on down into the foot.



Finally, I finished up the main battery railing, I installed stubby pieces at the ends of the rails. Now the batteries won't slide around at all.





*posted by Victor Franco at 10:47 PM* 0 COMMENTS

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MONDAY, MAY 07, 2007

## **Primer for Foot Shells & Center Foot, Finished Painting Half Moons, Foot Doors, Battery Boxes, CIV Badges, Battery PVC, Painted Skin Screws**

Mostly primer and painting today. In more-or-less chronological order:

In the morning I gave the foot shells one last coat of primer and a sanding, in preparation for painting tomorrow.



I also applied primer to the channel area of the center foot; that area needs to be painted white, as it shows to the outside world.





One last coat of Rustoleum Satin White on the half moons, foot shell doors, and battery boxes. They are done being painted (as far as I can tell).





My Celebration 4 stuff arrived in the mail today, along with my replacement CFSound III board. I will mail back the damaged sound board for repair tomorrow. The new board works just fine, and I was able to verify that the original Contact Sense 24 was undamaged.



The main batteries' terminals were exposed, so I glued down some PVC covers to keep anything from shorting the positive and negative leads together.



I wrapped up by brushing on a dab of white paint on each of the skin screws. Hey, where'd they go??



*posted by Victor Franco at 11:09 PM* 0 COMMENTS

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TUESDAY, MAY 08, 2007

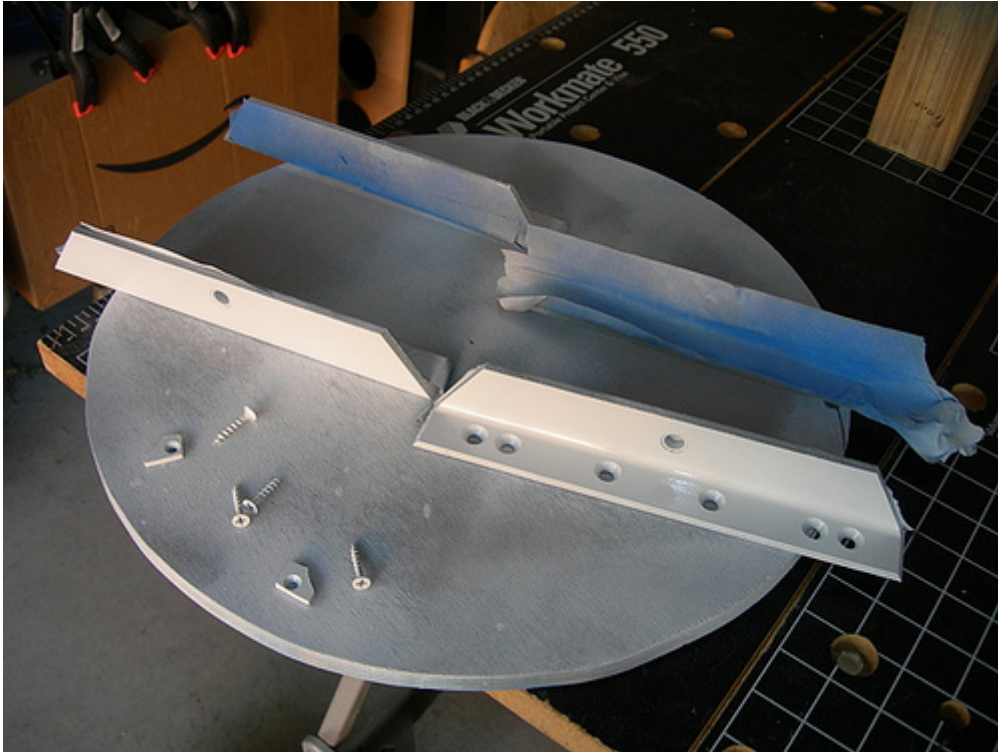
## **Painted Foot Shells, Center Foot & Drivetrain Channels, Center Ankle, Silicone for Shoulder Flange, T-Shirts**

This morning I painted the foot shells white. I think these three coats are going to be enough.

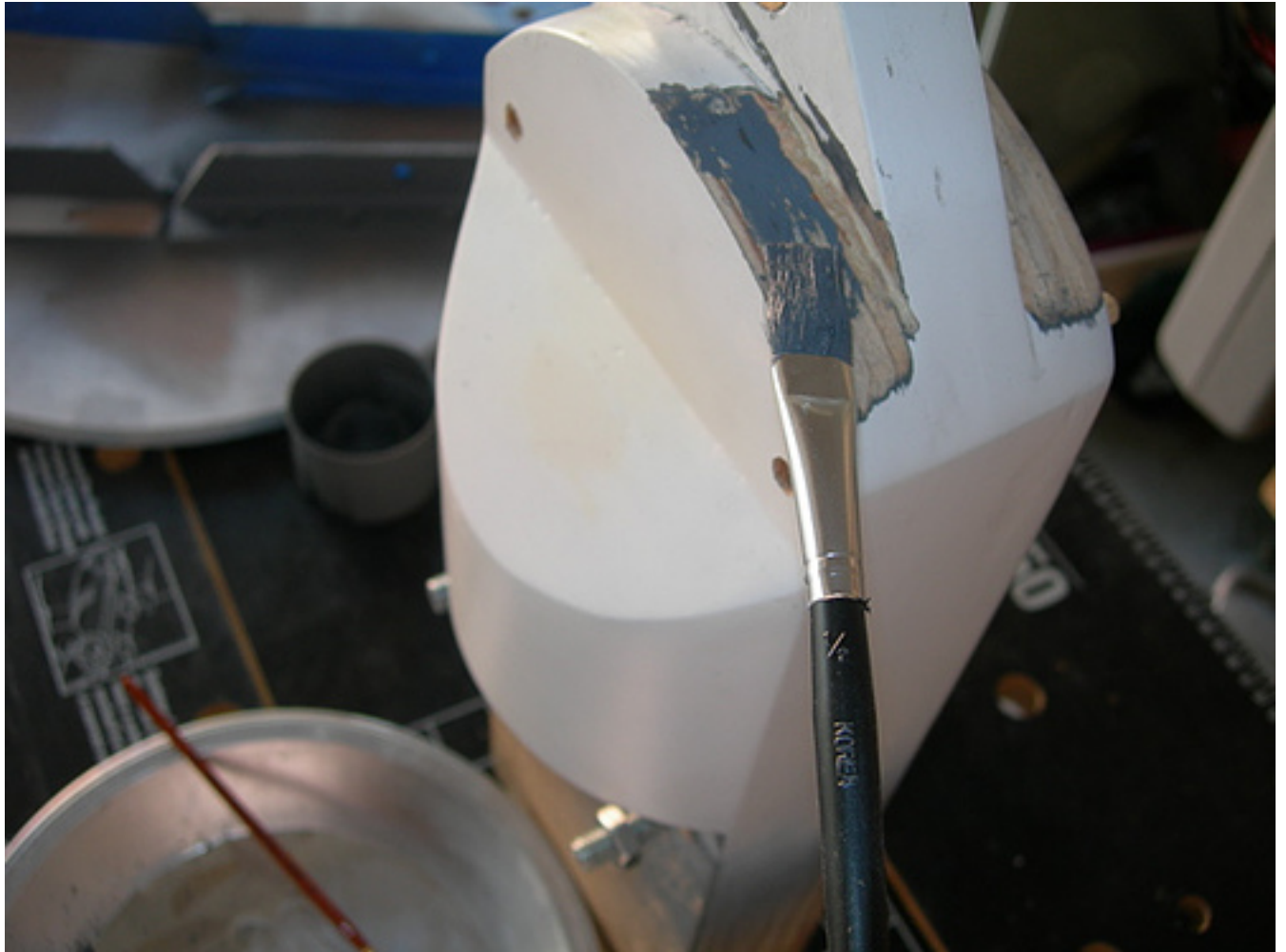




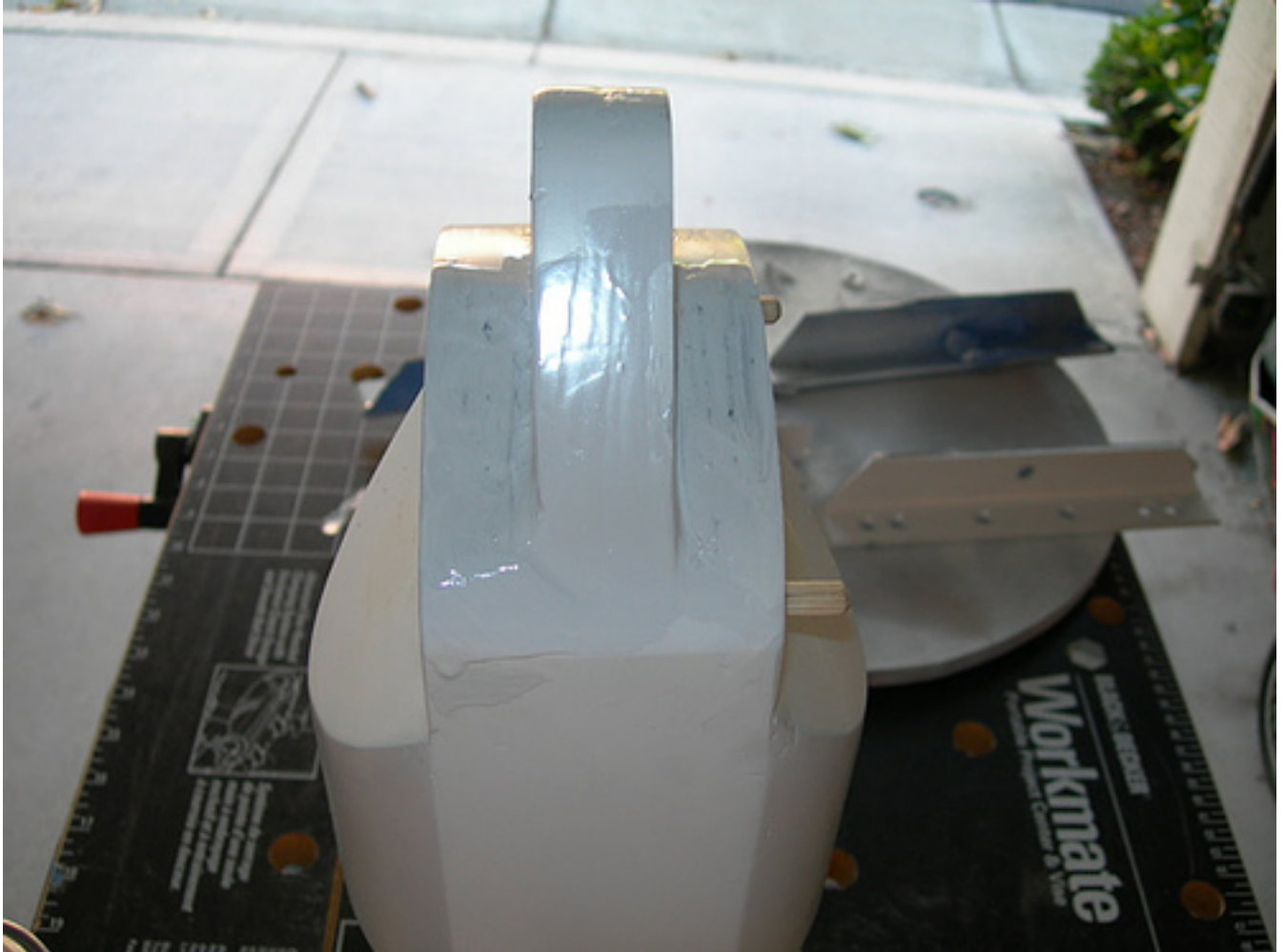
In the evening, I painted the channels on the center foot and drivetrain. I disassembled the drivetrain and only painted the channel pieces, I did not want to risk getting paint on the chain or gears, and I didn't feel like masking the whole thing. I think I'm done with the spray can now, just a little touch-up painting here and there with a brush.



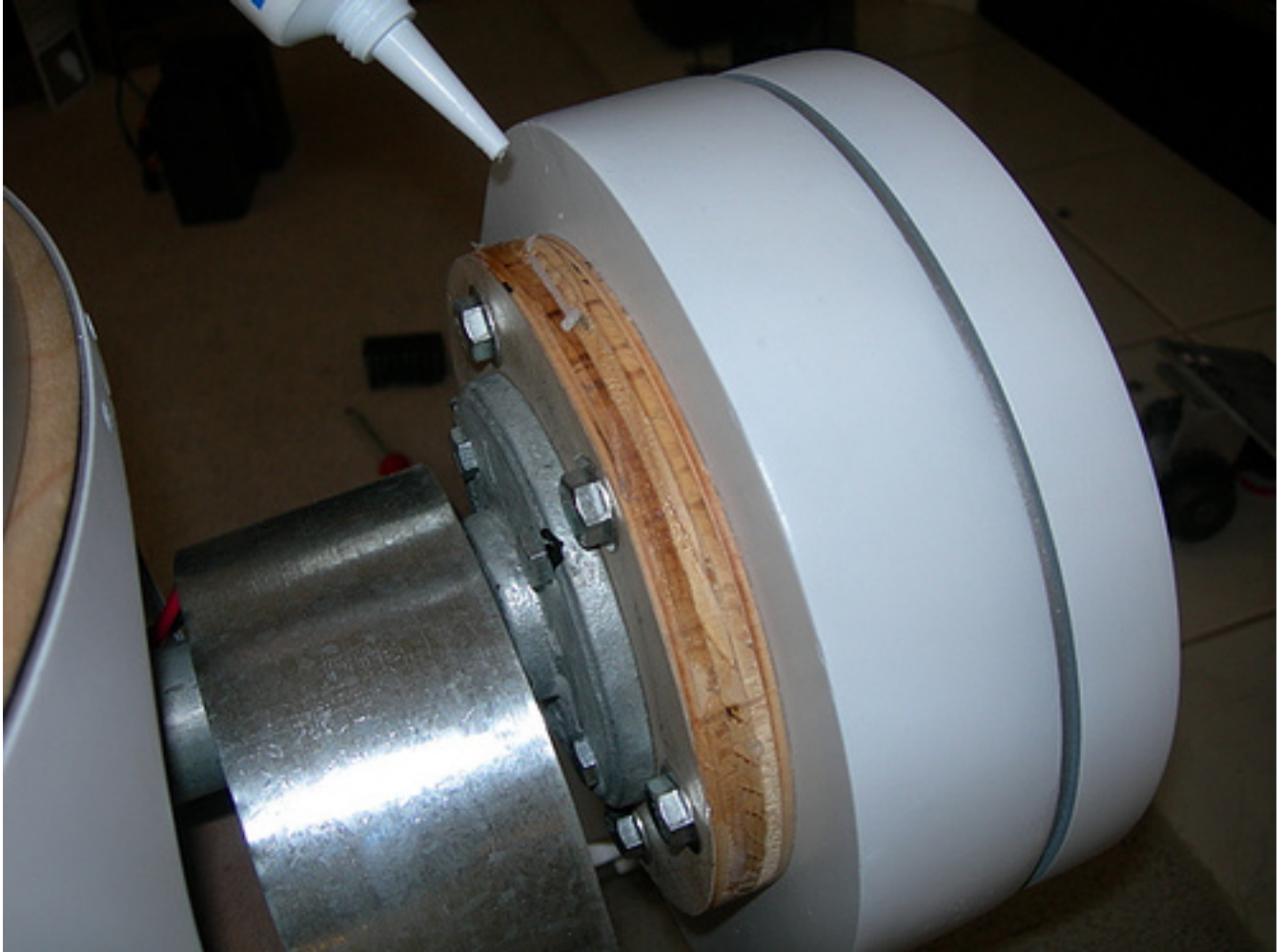
I brushed on primer, and later, paint, to finish the repair on the center ankle from this weekend. It looks pretty darn sloppy, more impetus to rebuild the center leg one day in the future. Keep in mind that most of this does not show though, as this portion of the ankle is facing down, toward the top of the foot shell.







I applied silicone to the wooden hub that holds the shoulder flange in place, so the flange piece won't move around and expose the wood underneath. There is also a single wood screw that holds the flange in place from underneath, but the top part had a tendency to shift.



Finally, I went to Mike's, but for once, it wasn't to do any building. I dropped off some screws for Mike, that he needed in order to mount his back door brackets. His R2 #2 is coming along very nicely, it should be done any minute.



More importantly, I picked up my super-duper, one of a kind, collector's item t-shirts. I have both a short sleeve version and a long sleeve version. These will be the envy of CIV.





*posted by Victor Franco at 11:32 PM* 0 COMMENTS

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WEDNESDAY, MAY 09, 2007

## More Center Ankle Paint, Installed Rear Power Coupler, Started Cutting Wheel Padding

My brushed-on paint for the center ankle from yesterday looked atrocious, so I sprayed on a little more paint tonight. Now it just looks bad, which is an improvement.



At long last, I installed the rear power coupler tonight. The power coupler frame is siliconed onto the back door, while the power coupler itself is held onto a small piece of wood with Velcro.

I attached the rear door, and then placed the small piece of wood with the power coupler attached to it such that the power coupler was perfectly placed within the coupler frame on the door. Then I glued down the piece of wood to the bottom of the frame.



Later, once the glue had dried, I removed the door to see how it all looked.



The door goes back on just right, and the power coupler still fits within its frame. The Velcro allows me to make minor adjustments if necessary, and I can also remove the coupler for repainting should the need arise.

I wrapped up by cutting some strips of rubber that I may or may not attach to the wheels of the outer feet. Those wheels are pretty expensive, and the layer of rubber would provide some protection. However, I would need to hack on the wheel housings of my drivetrain in order to get this extra layer to fit, and I'm not sure I want to do that. I'll think about it...





*posted by Victor Franco at 11:27 PM* 2 COMMENTS

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THURSDAY, MAY 10, 2007

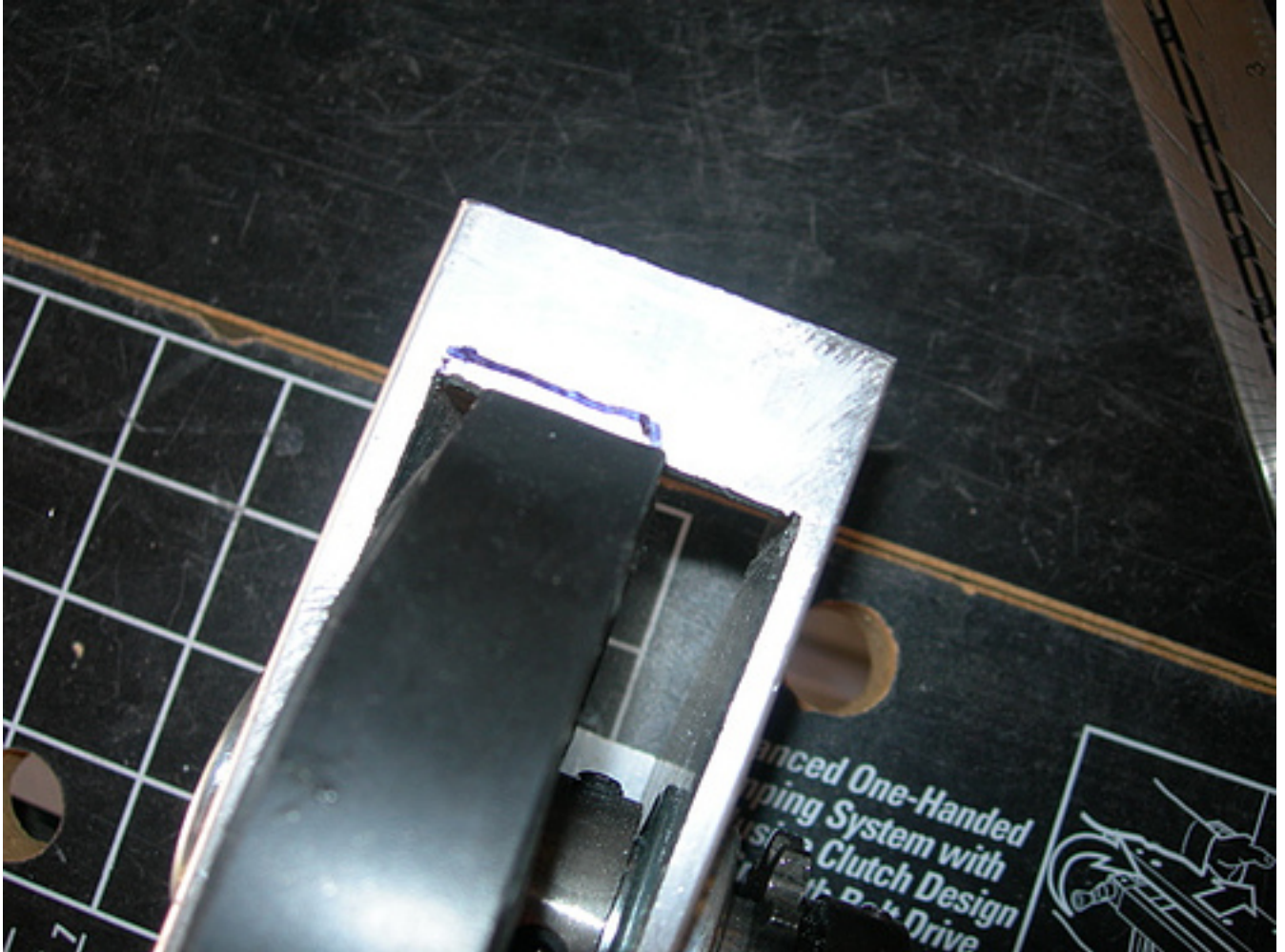
## **Voltage Converter Arrives, Wheel Housing Cuts, Painted Foot Shell Window Details**

The [voltage converter](#) that I ordered from Aircraft Spruce arrived today. This will convert 28/24 volts down to the 12 volts that the CFSound III card requires. I haven't tried it out yet, but I will test with a multimeter first, you can bet on that. Thanks to Chris Romines for finding this. There are similar products out there, but this is the one I ended up going with.



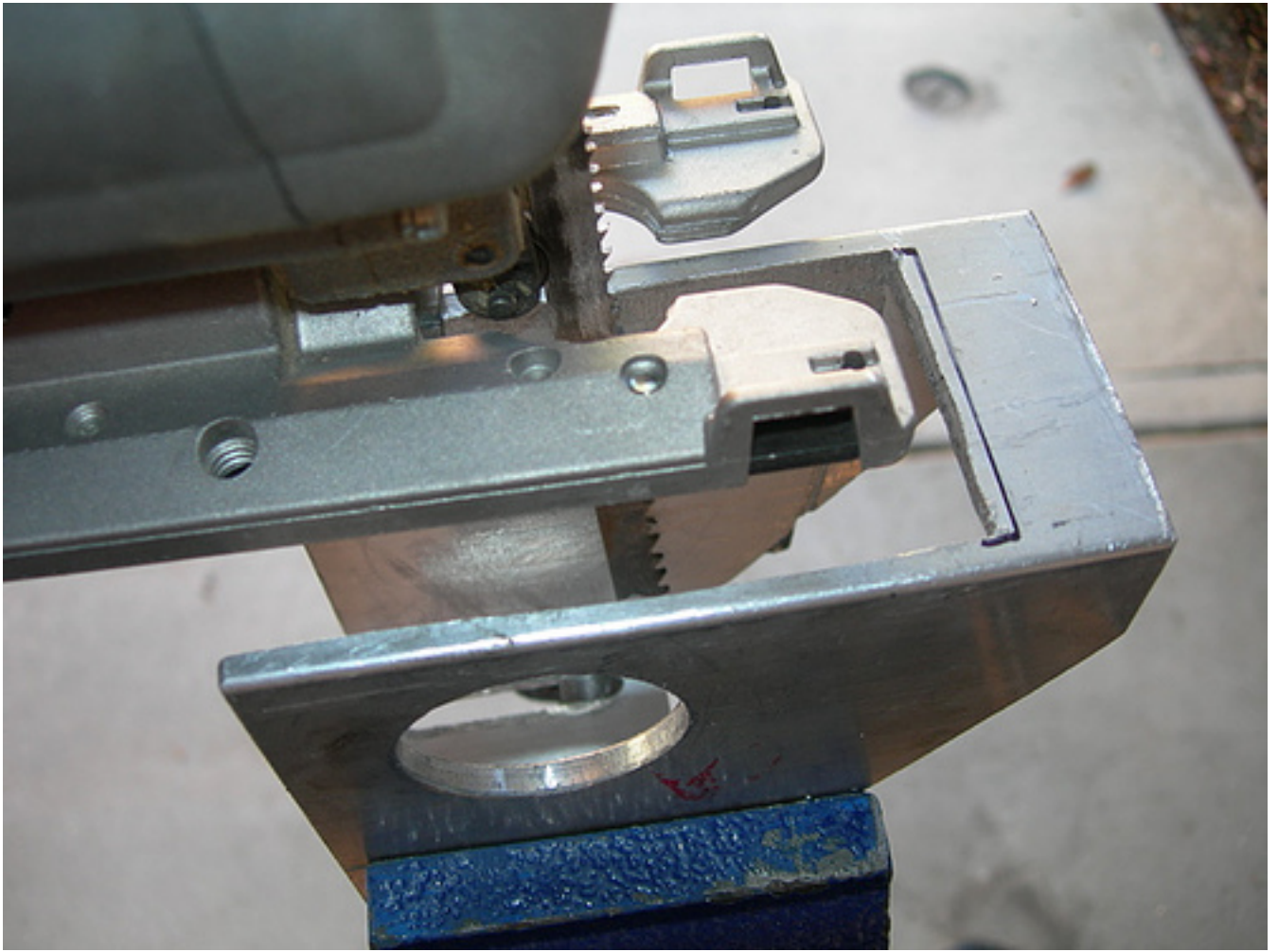
I decided to go ahead and open up the wheel housings on the drivetrain to allow a 1/4" layer of rubber that I may glue to the wheels to pass through the edge of the housing. Without this trim, there wasn't enough room for that extra material.

I placed one of the rubber strips I cut last night on top of the wheel to get a feeling for how much material needed to be removed.



I used a jigsaw to hack away at the wheel housing, and I used a file to clean up the cut.







I wrapped up by hand painting the hard-to-reach areas of the foot shells, where the little windows are. I'm not sure if this really mattered, but I decided to do it anyway.



All the painting I did this week should be thoroughly dry by the weekend, so I'll be putting R2 back together again soon, and adding the finishing touches early next week. The end is near.

*posted by Victor Franco at 11:08 PM* 0 COMMENTS

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FRIDAY, MAY 11, 2007

## **Redrilled Holes for Half Moon, Foot Shell Assembly, Finished Cutting Wheel Padding, Helped Roy, Installed Battery Harnesses**

I wasn't happy with the location of the half moon on one of my center foot shell doors, so I drilled three new holes and remounted the half moon.





Then I assembled the center feet, with the doors and half moons attached. I'm pretty happy with how these turned out.



I finished cutting out the last of the rubber layers for the wheel padding. Right now I think I'm going to leave these off for a little while. One reason is that if I install this layer of rubber on the wheels, then the threaded end of the knurled cable fittings will need to be further chopped down on the end that fits inside the foot shell, or else they will run into this layer of rubber.

I prefer not to shorten the thread end of the fittings, because I won't have enough room on the fittings to secure them from behind with nuts. And if I can't do that, then I can't secure the front foot strips without drilling them and using screws to secure them, as I did with the rear foot strips. I will probably do that eventually.



Roy Powers came by for a while to discuss some drivetrain trouble, and to get his dome drive controller finished.





I wrapped up the evening by using silicone to glue down the battery harnesses onto the battery boxes.



Tomorrow I plan to start putting R2 back together again. For the first time he'll have his painted battery boxes and foot shells on, and there will be very little work remaining.

*posted by Victor Franco at 11:16 PM* 0 COMMENTS

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SATURDAY, MAY 12, 2007

## Building at Mike's, Reassembled Drivetrains

Chris Romines and Roy Powers had some droid building to do at Mike's, and Mike said he thought he could revive a couple of non-functional Saturn motors of mine.

Mike was all laughs when he found out I was testing the motors with the covers off. I learned today that you can't do that. I did have a broken solder joint in one of the motors that was repaired, but it looks like the other motor was never bad in the first place. At any rate, both motors are running now, and I put one of them

on my droid when I got home, as it had a superior shaft adapter attached to it, compared to the one that I was using on my right foot.



Meanwhile, Mike and Chris worked on Chris' wire-up, while Roy fought with his drivetrain.





By the end of the day, Chris' droid was moving via R/C. Two droids have taken their first steps in the last three weeks at Mike's.



When I got home, I spent quite a while putting my two drivetrains back together.

Every piece had been taken apart, so they didn't go back together quickly. I placed the drivetrains in their respective foot shells, ready to go back on the legs tomorrow.



*posted by Victor Franco at 11:57 PM* 0 COMMENTS

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SUNDAY, MAY 13, 2007

## Back on Three Legs, Left Motor Troubles, Sound Card Troubles

R2 is back up on three legs again, this time with his painted battery boxes and foot shells installed.





He was running for a few minutes, and this time the left motor decided to stop working. I'm betting it's the solder joint in the motor again, but I haven't had a chance to properly diagnose the problem. It's always something.

I'm worried that I may have damaged my second CFSound III card. I don't know what I did wrong, as I'm pretty sure I've applied no more than 12 volts to it, but every time I power up the card, all I get are a pair of solid red and green LEDs. This happens whether I use the wall adapter that came with the sound card, or if I use a 12 volt battery.



The FAQ says the two LEDs lit solid can indicate low voltage, but I don't think that's the case here. I will call ACS tomorrow and ask them if they can help, but I have a sickening feeling that this board is dead too. (I wonder how the repair is coming along on my first board?)

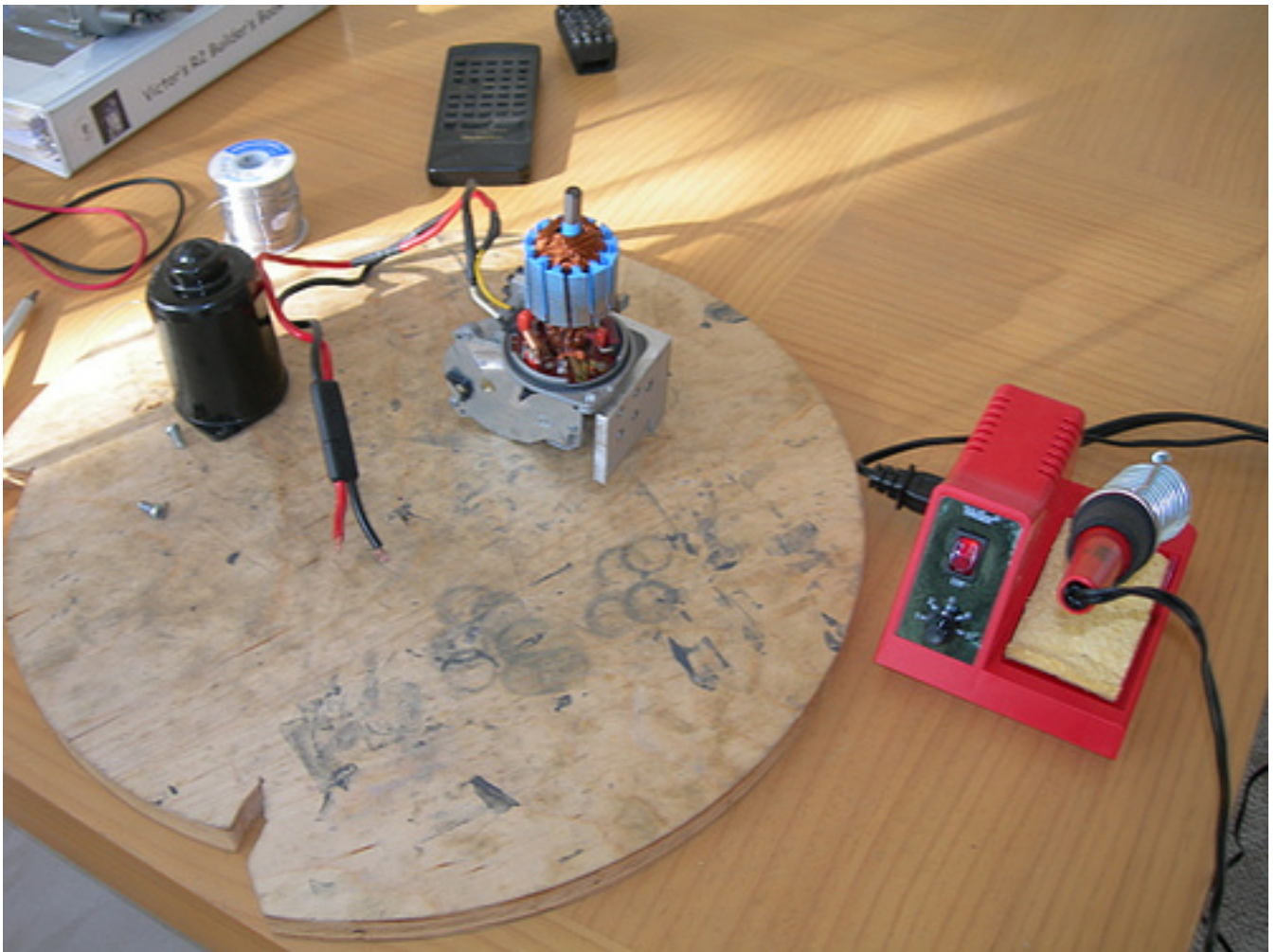
*posted by Victor Franco at 11:10 PM* 0 COMMENTS

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MONDAY, MAY 14, 2007

## Fixed Left Foot Motor, Cutting Board for Outer Feet

I fixed R2's left motor tonight. Again, I guess the solder job on the 24 volt conversion must have been inadequate, although the solder joint seemed okay when I opened the motor. I resoldered, and now the motor works again. I hope this problem doesn't keep happening.



I used Mike's trick of chopping up some cutting board for the outer ankles to keep

the outer feet firmly on the ground. I used a cheapo cutting board from Target, R2 is not picky.



With the battery boxes in place this is barely noticeable, and the power and antenna wires are almost completely concealed.



R2 was happy to be up and moving around again.





I still have a few minor things to do. First, ACS is kindly sending me (yet) another sound card, the most recent one is going back to them soon. I should have the new card by Thursday. I will do my best not to harm it. Second, I need to make the outer leg cylinder holders a bit smaller and reattach them. I also need to do some housekeeping on the internal wiring, and make a 12 volt power bus for the Keycoder and CFSound III boards. There are some other small things to do, but that's the bulk of it.

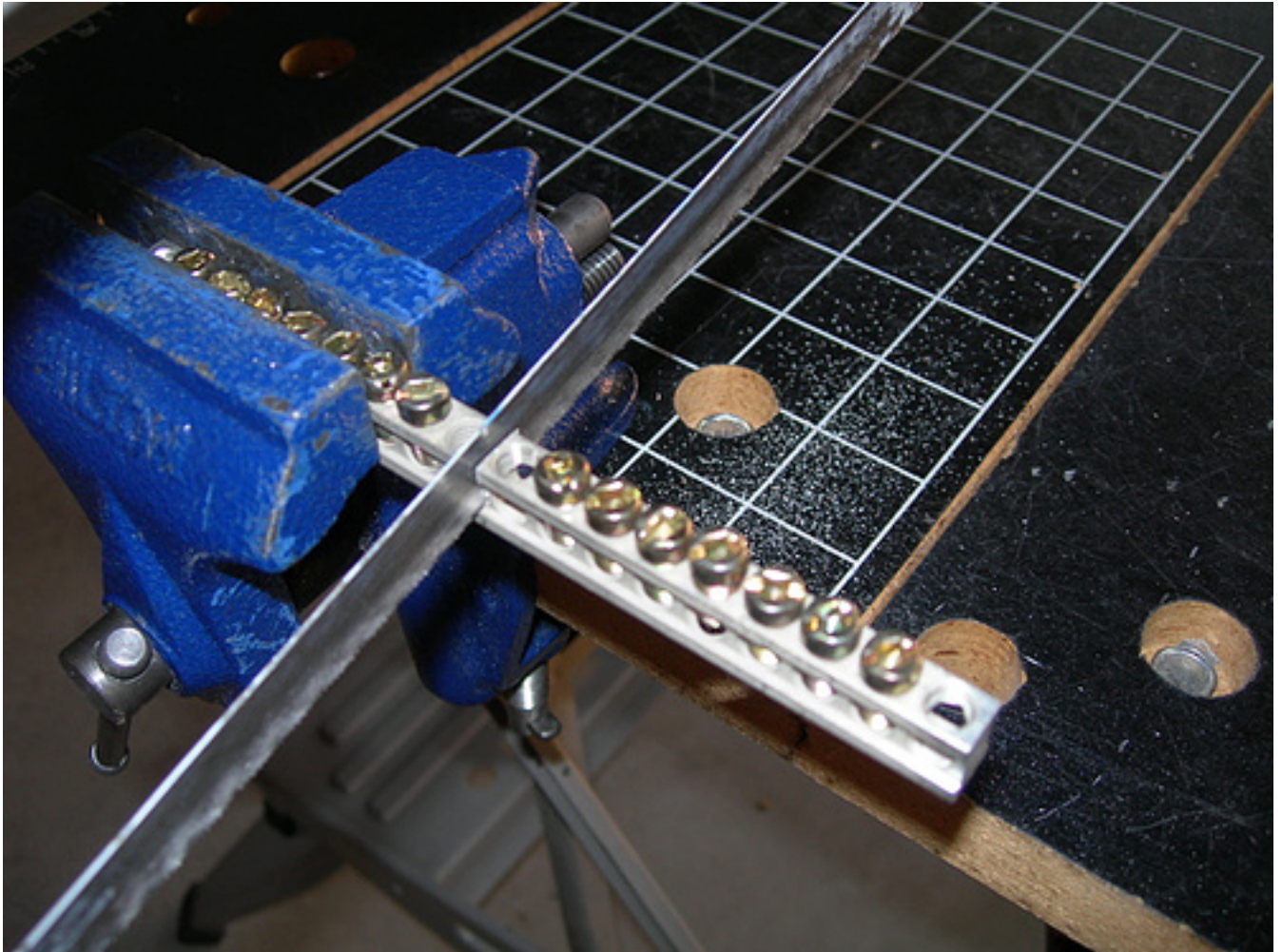
*posted by Victor Franco at 11:21 PM* [1 COMMENTS](#)

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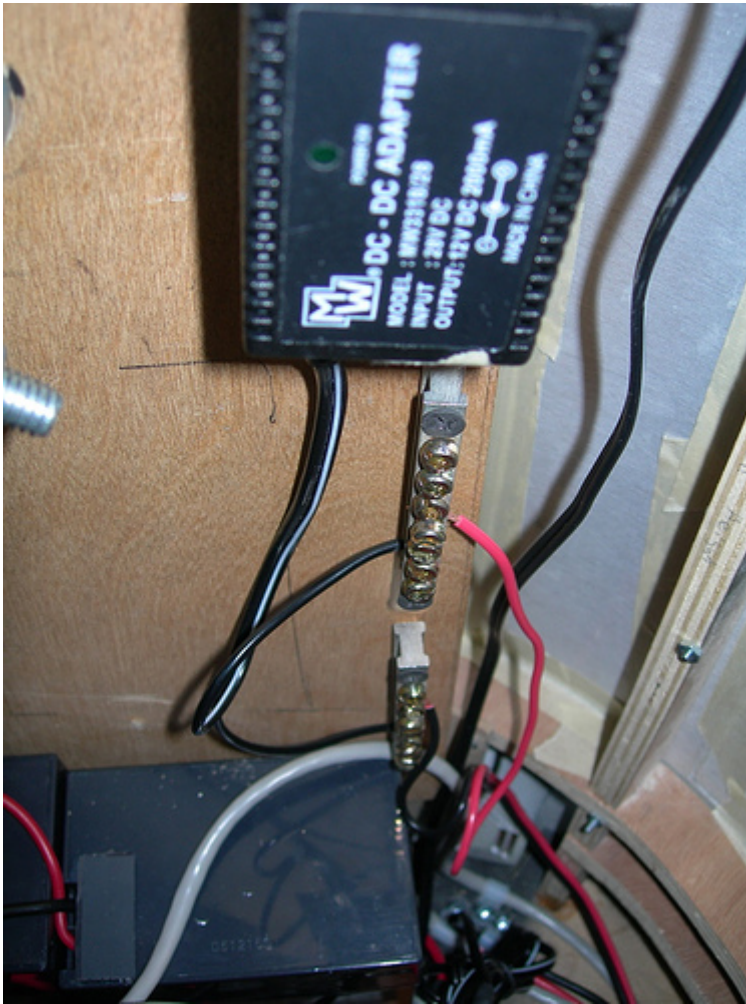
TUESDAY, MAY 15, 2007

## Started Working on 12 Volt Power Bus

Tonight I cut a ground bar in half, and drilled some mounting holes for use as +12 and ground connectors for my 12 volt devices (namely the Keycoder and CFSound III card).



I hooked up the 12 volt input signals, and the Keycoder. The CFSound III replacement board(s) should be here by Thursday, so *hopefully* everything will work correctly now that they will be sourced from the same 12 volt power supply.



*posted by Victor Franco at 11:50 PM* 0 COMMENTS

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WEDNESDAY, MAY 16, 2007

## **Glued Down Ankle Bracelet Strips & Utility Arm Backstops, Painted Drivetrain Screws, Installed Speaker**

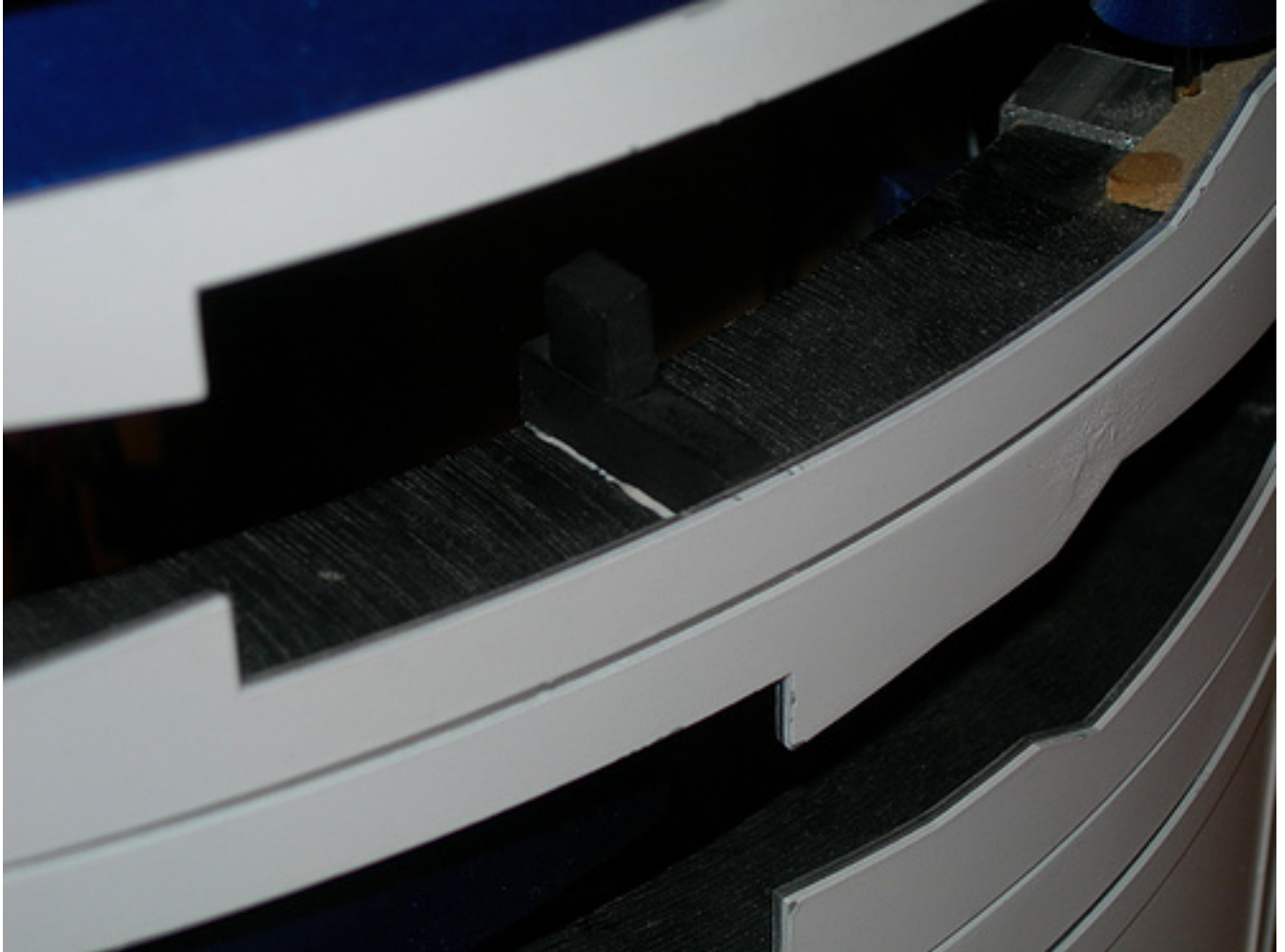
I wrapped up a few more of the remaining details tonight.

I used model glue to glue down the strips that go on the back of the ankle bracelets.





I used wood glue to attach the backstops for the utility arms. The backstops are painted black.



I painted the drivetrain screws that are externally visible, so they'll blend in better with the white channel.



Finally, I installed the speaker behind the lower front vent. I don't have a working sound system just yet, but I should have one by this time tomorrow. Hopefully the speaker will sound okay mounted there. I'll know soon.





I must be getting close to the end, I managed to finish this post before 11:00pm.  
*posted by Victor Franco at 10:51 PM* [3 COMMENTS](#)

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THURSDAY, MAY 17, 2007

## **New Sound Card Installed & Working, Sanded Down & Primed Cylinder Holders**

My repaired CFSound III card arrived today, and it works perfectly and is now installed in my droid. R2 is beeping and chirping like a happy droid should.



I sanded down the cylinder holders using the belt sander in the evening.



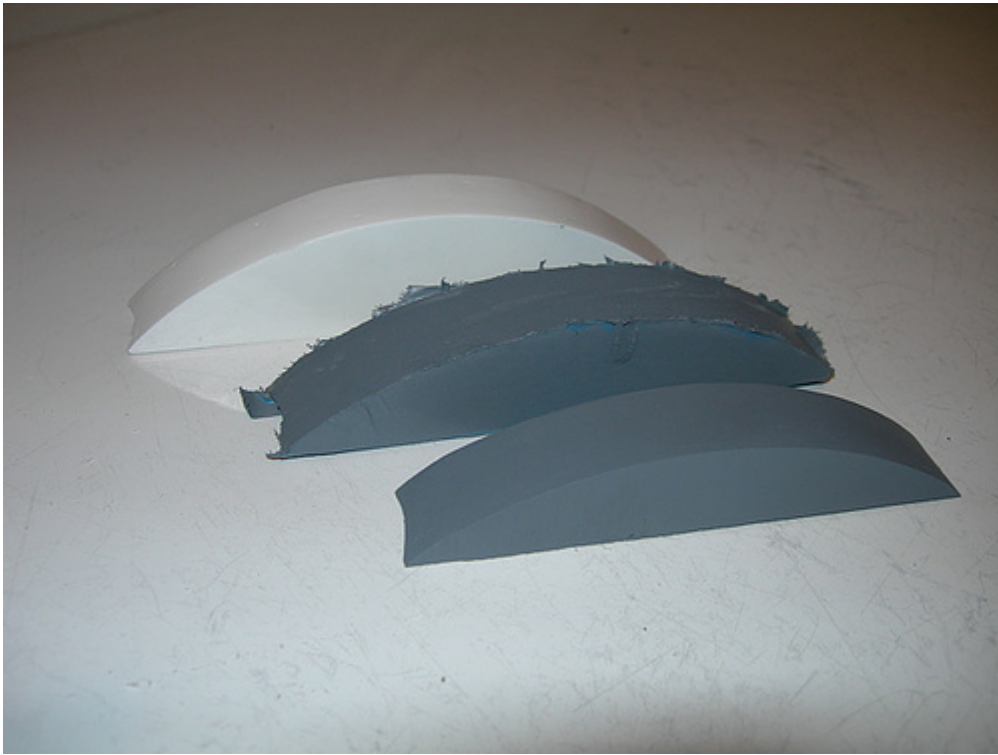
Later, I applied primer.

I modified one of my original wooden cylinder holders, and a resin one that Mike had. (I figured resin would sand faster and smoother than wood.) I masked my pre-existing wood cylinder holder, but the resin piece required complete coverage.

Compared to my other original wooden cylinder holder, the modified wooden holder had to be sanded down by about 20% to fit on the left leg, and the resin holder had to be sanded by at least 40% to fit on the right leg.

It won't be beautiful, but I have no choice; I have a slightly irregular droid.





*posted by Victor Franco at 11:31 PM* 0 COMMENTS

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FRIDAY, MAY 18, 2007

## Painted Cylinder Holders

This morning I painted the cylinder holders. I'll let them dry for about 24 hours, then I will install them with silicone. This will be the last step for my initial build.



*posted by Victor Franco at 10:59 PM* 0 COMMENTS

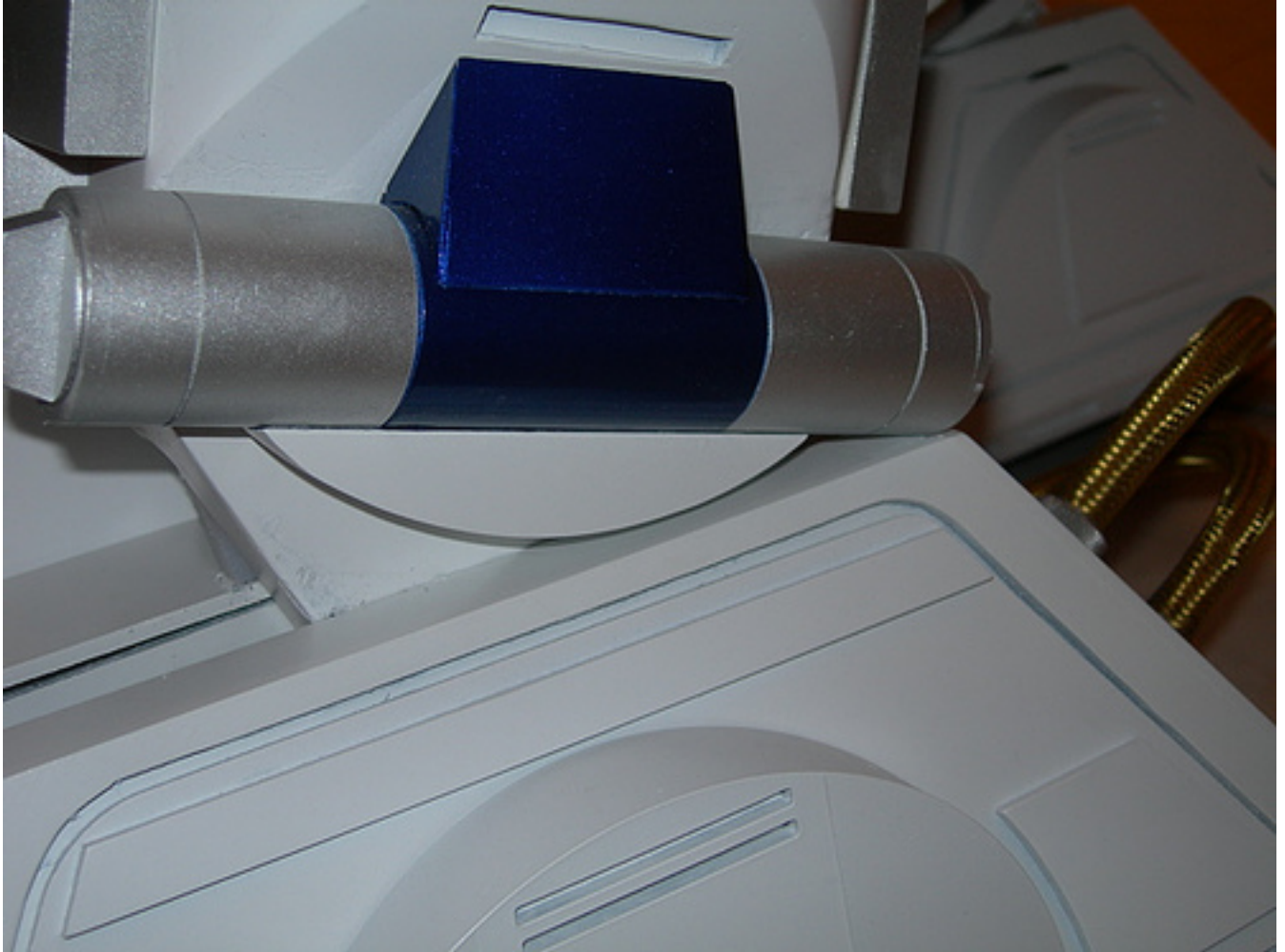
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SATURDAY, MAY 19, 2007

## Glued in Cylinder Holders, Built Manual Droid Lift, Reattached Rear Coin Return

Today was supposed to be the day I crossed the finish line with R2, but I hit a small stumble. More on that in a moment.

In the morning I glued the cylinder holders in place with silicone. They seem to be holding well.

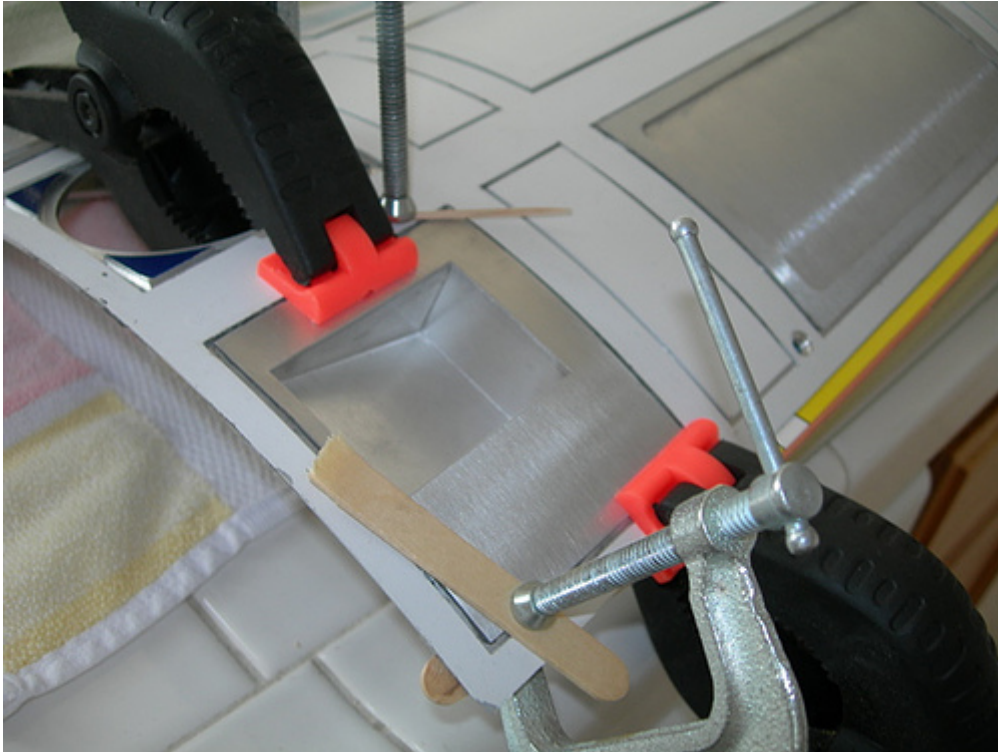


During the day, I built the "manual droid lift." This consists of pipe, pipe connector, U-bolts and bars. The idea is to hook two U-bolts around the main leg pipe in body, attach that to a couple of bars on one end, and then have a pipe at the top that runs above R2, attached with two more U-bolts to the bar. He can then be lifted by two people, into a van for example.





Unfortunately, as I was fitting the droid lift onto R2, I dropped one of the U-bolts, and it whacked the right rear coin return from behind and knocked it clean out of the back door. I applied JB Weld and reattached the coin return, and by morning it should be good.



Tomorrow is R2's big day. I'll have more to say about that soon.

*posted by Victor Franco at 11:55 PM* 0 COMMENTS

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SUNDAY, MAY 20, 2007

## R2's Big Day

R2 is done.

Wait, let me rephrase that.

R2 IS DONE!!!

Today was R2's big day, the day of his unveiling. I have managed to keep R2 a secret from my folks and one of my two brothers the entire time I've been building R2, and that was no easy feat. (I couldn't keep such a secret from everyone, so I let the other brother in on it.)

Today, R2 was completed, and just in time. My folks were invited to come and see the unveiling of "The Project" this afternoon, while I had one of my brothers on-line for a video conference from Berkeley.

I queued up the 20th Century Fox fanfare, followed by the opening blast of the Star Wars main theme. As that first note hit, my buddy Kelvin and I threw off the

cover on R2, and my parents were quite surprised! I hope to post some video of this shortly.



They couldn't believe I actually built R2-D2. I am a bit dumbfounded by it myself, but there he was.





I showed them my Builder's Notebook, and told them all about how he came to be. I even created a short "Making of R2" video, that speeds through 1881 slides in 4 minutes, all to the tune of "Duel of the Fates." (I'll now admit I've taken over 10,000 pictures of my build - you read that right.)



And then... it was time for R2 to go away.

In preparation for transportation to CIV, I needed Mike Senna to come by and pick up R2 and take him to his house, where he will leave for the LA Convention Center on Wednesday. But not to fear, I will probably see R2 at Mike's tomorrow.

Using the new manual droid lift, Mike and I loaded R2 into Mike's van, and I waved bye.





So R2 is done, but is he ever really *done*? I plan to add servos for the utility arms to allow them to open via remote control, and I also want to add the mist-spray effect. I may also add a layer of rubber to the wheels before CIV, if possible.

I do plan to slow down a bit on the blog, so updates may not be as often as they have been. I expect I'll still have things to share in the lead-up to CIV, as well as during the event itself.

Thanks to everyone that has been following my build, and I know there are a lot of you "regulars" that check this blog frequently. I appreciate your interest and support, and all the suggestions and encouraging words you've provided.

-Victor

*posted by Victor Franco at 9:53 PM* [1 COMMENTS](#)

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MONDAY, MAY 21, 2007



## First Modification - Rubber for Drivetrain Wheels

Ha. Just when I thought I'd slow down with the blog...

First, there's a short video of my R2's unveiling at:

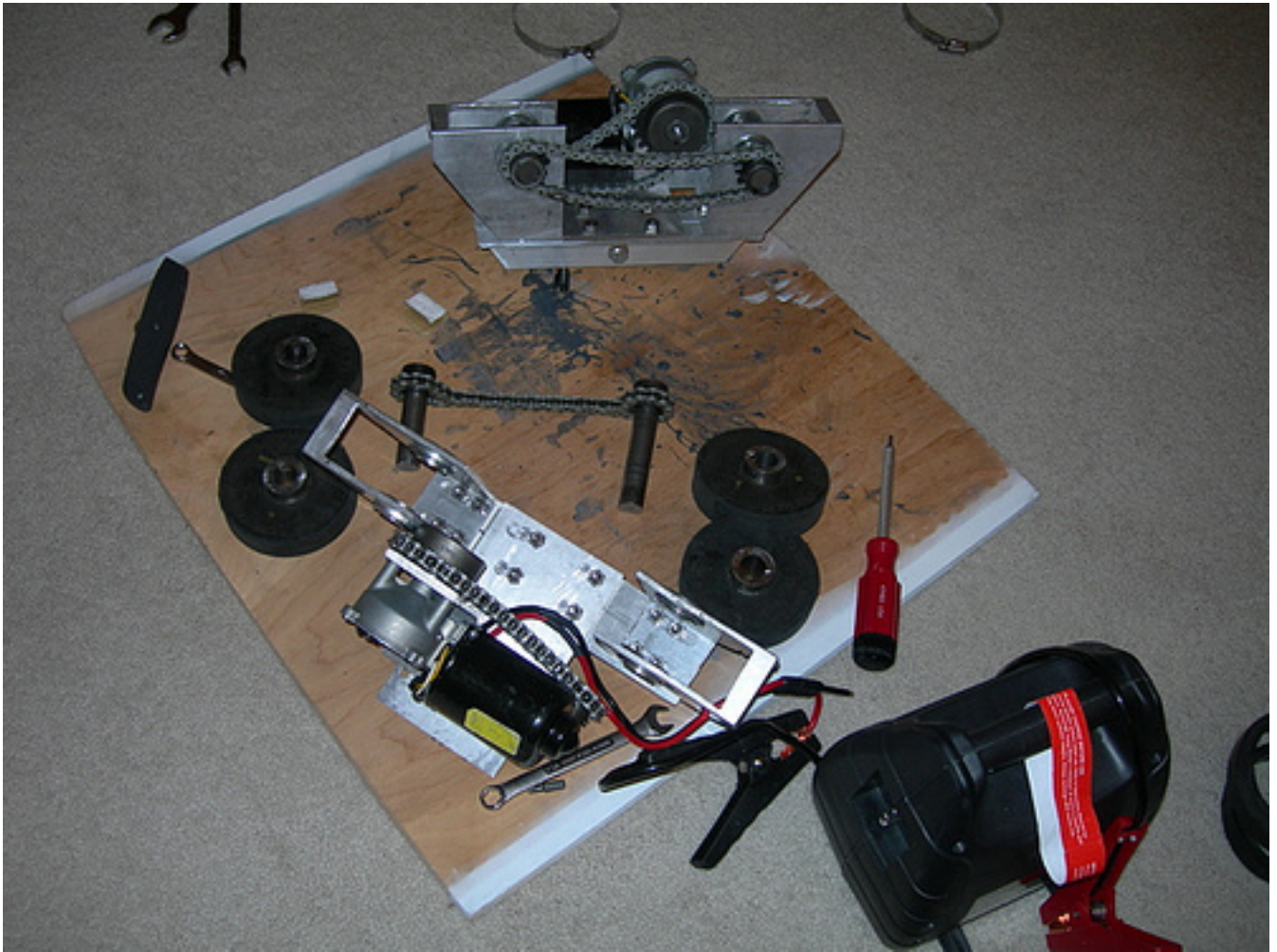
<http://pw2.netcom.com/~r2/R2Debut.html>

The unveiling was done in my garage. R2 was under wraps, with my folks waiting outside the garage. I opened the garage, cued the Star Wars theme, and did the the reveal.

Back to today's activity. I've decided that I want to go ahead and put a layer of rubber on the drivetrain wheels, so I swung by Mike's and grabbed the drivetrains for the wheel modification.

I cut the rubber out (yet again, the prior efforts were from 4" diameter pipe couplers, I needed 3"), and took the wheels off the drivetrain. Tomorrow I'll install the layer of rubber with contact cement.





We're picking up the 17' U-Haul truck tomorrow to transport out-of-town droids to the convention center. That could be an adventure all by itself.

*posted by Victor Franco at 10:39 PM* 0 COMMENTS

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TUESDAY, MAY 22, 2007

## U-Haul Truck, Rubber Layer for Wheels, R2's First Event

And the CIV craziness begins.

Mike and I picked up the 17' U-Haul truck we are using to lug stuff to CIV, that was shipped by various other builders around the country.





On the way to the U-Haul location, Mike managed to glue down the rubber layer to each of my four outer foot wheels while I drove. Things were so hectic I didn't manage to get a picture of them.

When we got back, Mike started loading the truck, while I made a Home Depot and Staples run to pick up stuff for the Builders Room.

Then, we loaded my R2 into Mike's van for R2's first public event. GenCon and Lucasfilm hosted a reception at the Bonaventure hotel in downtown Los Angeles, and various costumers were asked to come out, along with R2. Unfortunately, R2's feet and battery boxes were completely removed, and wheels off when we started the drive to the hotel.

I assembled the greasy, oily drivetrain in the front passenger seat, while wearing my dress clothes. Good thing I brought lots of paper towels. I managed to get the drivetrain together, and Rick Thames helped me to get R2 back on all three legs. We made it into the room, and R2 posed for pictures with the crowd.





Later, I met Steve Sansweet, Lucasfilm Vice President of Fan Relations. We posed with R2.



This is just the start of what promises to be a crazy, exhausting, and fun-filled week.

*posted by Victor Franco at 10:37 PM* 0 COMMENTS

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WEDNESDAY, MAY 23, 2007

## CIV Setup

The R2 Builders room quickly filled with droids galore today, CIV Setup Day.

Craig Smith had a new surprise for us, a Mustafar droid. Craig's beautiful droid with brass accents was also on display.







Andy Schwartz brought his mini R7 droid.



Kelly Krider had a very cool surprise for us, a Ralph McQuarrie concept droid. Keith Henry's beautiful color-shifting droid was between Kelly's droids.



William and Nikki Miyamoto's HAL droid was on display, and the dome is something to behold. One of the most original domes you will ever see.





Even out-of-towners got into the act.



Local media came by the room, and did interviews with Wayne Orr, Tom Jozwiak, and Don Bies, among others.



Guy Averett's beautiful R2-A6 showed up.





The rebel blockade runner set was mostly set up, just a bit more to do. In the opposite corner of the room (near my droid), there was a new Death Star set.



More droids, including a couple of Senna's (Pink 5's droid is on display), along with the Craig Smith collection.



Finally, I scored the Ralph McQuarrie concept droid action figure set.





Tomorrow's the big day, the opening of the room to the public at noon.  
*posted by Victor Franco at 11:19 PM* [1 COMMENTS](#)

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THURSDAY, MAY 24, 2007

## CIV Day 1

I'm not even going to attempt to narrate today's activities at CIV, except to say it was a great day, many hundreds (if not thousands?) of people came through the room throughout the day, and everyone loved the droids.

A bunch of pictures are at:

<http://www.flickr.com/photos/84159971@N00/sets/72157600263490311/detail/>

I will need to update the URL to a different location in the future, my free Flickr account only supports photosets that include the last 200 uploaded pictures.

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*posted by Victor Franco at 11:56 PM* 0 COMMENTS

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FRIDAY, MAY 25, 2007

## CIV Day 2 - A Good Kind of Tired

I think all of us attending CIV are becoming acquainted with the true meaning of exhaustedness. We're tired, but it's a good kind of tired.

The day started with a visit to the R2 Builders Room by Kenny Baker and his companion. Kenny was given his honorary membership plaque, as well as a hat, book and shirt.





Mike competed in the droid races with his customized drivetrain, but even his Speed Racer outfit wasn't enough to win.





I got to hang out for part of the day with some of the guys, along with Chris Bartlett as C-3PO. Chris is a *great* C-3PO. In order to get Chris, er, I mean 3PO, around from place to place, we used a cart.





Later, we crashed in on Anthony Daniels' autograph area, and he had fun with us.





G4 was broadcasting live from CIV, and dragged R2 and 3PO onto the show. After 20 minutes of not showing them, R2 and 3PO got up during a commercial break and left! We had better things to do.



We had fun with various Star Wars celebrities, and Mike let them take a turn driving with R2 and posing for pictures.





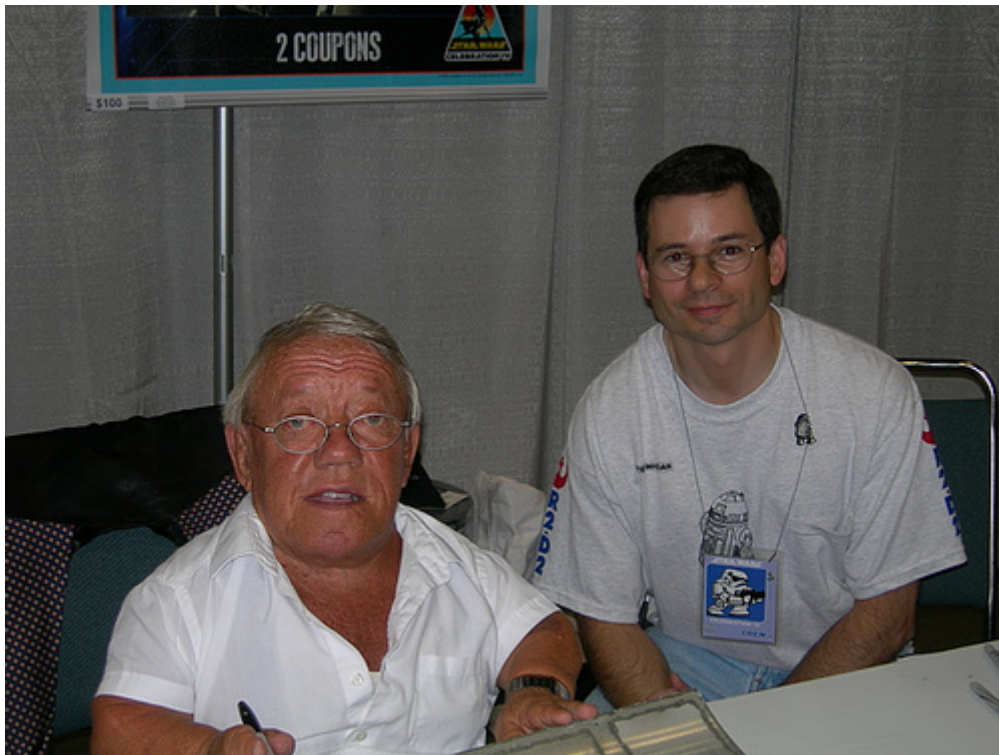




Much to my delight, I was able to have Kenny Baker sign my back panel.







Finally, we returned to the R2 Builders room, where Don Bies caught up with Chris Bartlett for a short chat.





We wrapped up by showing some video we shot during the day.



As I said, a very tiring day, but lots of fun.

*posted by Victor Franco at 10:03 PM* 0 COMMENTS

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SATURDAY, MAY 26, 2007

## CIV Day 3

Once again, I'm too exhausted to narrate pictures, a bunch more are at:

<http://www.flickr.com/photos/84159971@N00/sets/72157600271198160/detail/>

Some quick highlights:

In the morning before the doors opened to the public, we had a gaggle of Princess

Leias come in to be photographed with the R2s.

I did booth duty for a little over an hour at the Hasbro booth with my R2, it was quite enjoyable.

The ILM droid and Daniel Deutsch's Disney droid joined our droids in the room.

Mike finally got the last autograph he needed for his back door - Carrie Fisher.

Time for sleep.

*posted by Victor Franco at 11:41 PM* 0 COMMENTS

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SUNDAY, MAY 27, 2007

## CIV Day 4

The fourth day of CIV included the R2 Advanced Building session, with Guy Vardaman, Doug Dixon, Mike Senna, Jim Shima and Craig Smith.







Mike's kids dressed up in their Ewok costumes and drew quite a crowd. Several of the celebrities, such as Daniel Logan (young Boba Fett), left their autograph tables to take photos with them.





Don Bies dropped by the R2 Builders room and kindly signed my back panel.



One more day to go (not counting tear-down, that is...).

*posted by Victor Franco at 11:57 PM* 0 COMMENTS

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MONDAY, MAY 28, 2007

## CIV Day 5

Today was the last day of CIV. Tomorrow is tear-down day, and then we're completely done.

At noon we had the big droid parade around the main lobby of the convention center. Hundreds of people lined the parade route. Once we arrived to the main Star Wars banner, we stopped and had group pictures with us and our droids taken.









Some of us played a quick game of laser tag in the afternoon.





ILM model maker Lorne Peterson stopped by to check out our room, and I was able to get a picture with him.



At 3:00pm, the doors closed to the public, and it was time to start tearing down the room. A few droids still remain (including mine) and will spend one more night. We will take apart the blockade runner set tomorrow, and Mike and I will truck it back to his house, where it will await one more special trip. It is destined to become part of Steve Sansweet's private collection this summer.





*posted by Victor Franco at 9:51 PM* 0 COMMENTS

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TUESDAY, MAY 29, 2007

## **CIV Tear-Down**

One last trip to the Los Angeles Convention Center, to finish up the CIV R2 Builders Room tear-down.

The room was emptied of the remaining contents, including the Blockade Runner set.



Mike, Roy and I loaded up the set into the U-Haul.



Hey! Look what's stacked next to our truck, the Lucasfilm archive exhibit! It would have been a shame if we had accidentally loaded it up with our cargo, eh?



Daniel Deutsch's landspeeder gets ready to make the long drive back to Orlando.





And then there was one...



And then there were none. CIV is over-over. I can't recall as many consecutive days where I got so little sleep, but had such a good time making new friends. It was a great experience, one that I won't forget.

*posted by Victor Franco at 4:46 PM* [0 COMMENTS](#)

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