



# Bourno's Projects

2009

Flying Ghost

Ground Breaker

2007

Headless Horseman 2

Pneumatic Page

Skeleton Leaper

Leaf Monster

Radio Controlled Crawling Zombie

Bourno's MPJA MP3 Hack

Otaku's MPJA MP3 Hack

Otaku's Fogger Pump Repair Document

2006

Skelerectors

Web Shooter

ScareCrow

2005

Half Coffin

2004

PVC Horse

Skeleton Warriors

BOURNO'S FLYING  
GHOST SYSTEM

Fog Chiller

2003

Haunted Tree



# Bourn Again Creation's Halloween Page

## *Headless Horseman Prop # 2* *Video and Photo Page*

A few, at this time, pics taken during the build. [Build Pics](#)

OK, got a daytime video up here with horse and rider audio.

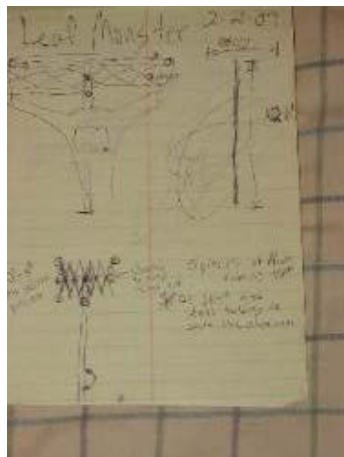
If the player doesn't work, you can download the file [here](#).





# Bourn Again Creation's Halloween Page

## Leaf Monster Home Page



The scissor mechanism is placed 15 to 20 feet in the air. When in the retracted mode, you see a small pile of leaves or such. When the scissor extends, the pile of leaves grow into a 20 foot tall monster.







Thrust bearings were used at the central pivot points to see how they would perform for giving a smooth, easy movement for the scissor mechanism.



This is the vertical tube that is attached to the tall pipe. It provides the horizontal stability of the scissor mechanism by a 24" drawer slide

and is the air cylinder mounting piece as well.





# Bourn Again Creation's Halloween Page

## *Skeleton Leaper Home Page*



Retracted, it is a little over 3 feet tall.

Extended, around 10 feet tall







# Bourno's MPJA MP3 player hack

A big thanks to Otaku at HauntForum.com for telling us about this \$5 MP3 player at mpja.com

This is going to be my hack version to control it via a Parallax controller board.



Crack open the USB part.



I tore out the push buttons



I then made a couple holes. One to get to the - Battery side (I removed the battery first before drilling)

The cover slot was enlarged before snapping back together.



At this time (1-27-07), I have only tested this by doing jumper tests from this solder point to the battery DC negative. The above wiring should work the same.



The best way to control the MP3 player is to have the Prop-1 control a relay and the MP3 control points connected to the Common and Normally Open contact points of the relay.

# Otaku's MPJA MP3 player hack

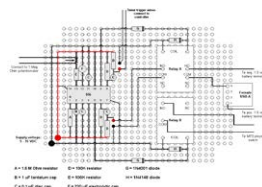
Here is Otaku's PDF files of his MP3 player hack

[MP3\\_timer\\_how\\_to\\_part1.pdf](#)

[MP3\\_timer\\_how\\_to\\_part2.pdf](#)

[MP3 timer how to part3.pdf](#)

Click on picture to see the schematic



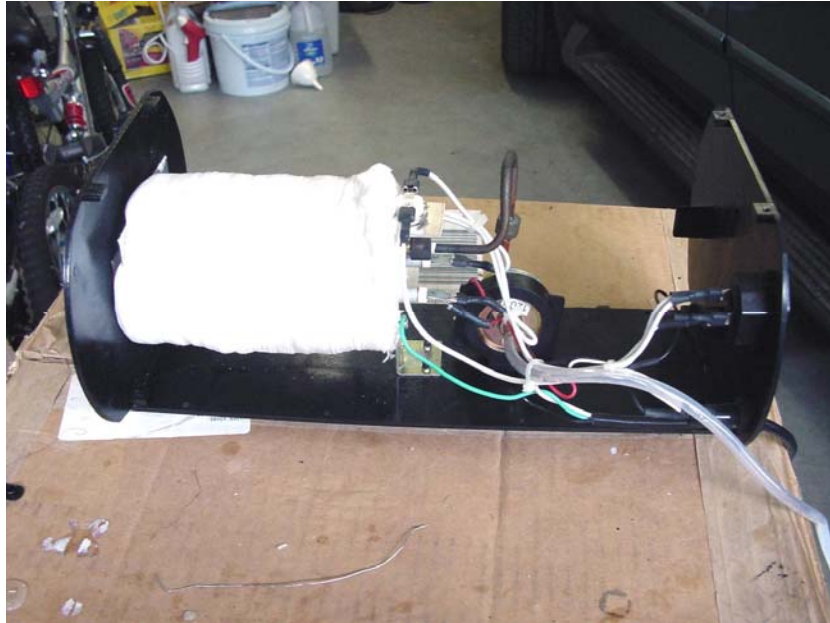
Click on Parts List for larger picture

Source	Part List for M3 Pro Power (Last Board Print)	Qty	Cost	Total
All Electronics	Power Core	PC-3	1	150.150
	Processor	7953	1	150.150
	DDR5 RAM	1M55	1	8.45
	DDR5 Installation cost	DI-25	1	0.39
	100W 110V plug	100W50	1	0.10
	220V to 110V converter	220V-10	1	0.25
	1.5 MHz 110V wall switch	1.5M-14	1	0.05
	120V 120V 110V switch	120V-14	6	0.05
	Switch cover	110V-14	6	0.10
	Switching device	110V-10	2	0.07
PCB Electronics	100W 110V switch	100W-14	1	0.05
	100W 110V switch	110V-14	1	0.05
	100W 110V switch	110V-14	1	0.05
	100W 110V switch	110V-14	1	0.05
	100W 110V switch	110V-14	1	0.05
	100W 110V switch	110V-14	1	0.05
	100W 110V switch	110V-14	1	0.05
PCB Electronics	100W 110V switch	110V-14	1	0.05
	100W 110V switch	110V-14	1	0.05
	100W 110V switch	110V-14	1	0.05
	100W 110V switch	110V-14	1	0.05
Radio Shack	100W 110V switch	110V-14	1	0.05
	100W 110V switch	110V-14	1	0.05

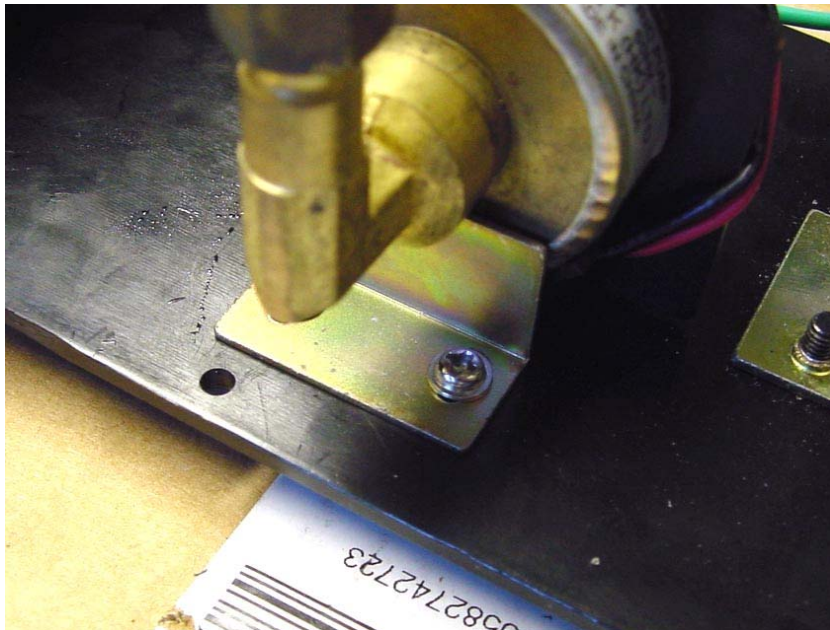
## Fog Machine Pump Repair How-To:

Please read the entire instruction. Note that this instruction may not address the cause of failure for your machine. However, if you have cleaned the daylights out of your fogger and it hasn't helped, or you hear a loud rattle or buzz when the pump is running but no fog comes out, this is the likely cause.

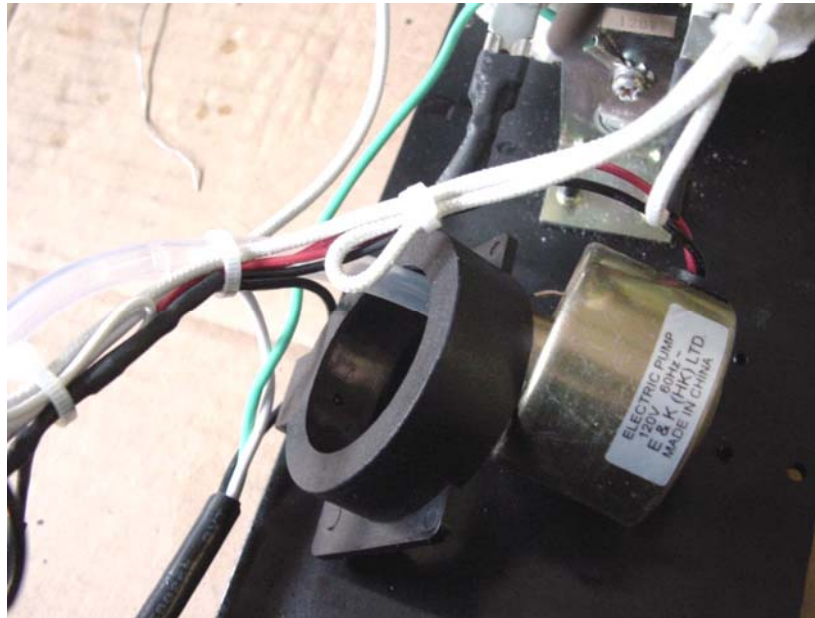
1. Drain the fog fluid reservoir. Remove the top cover and both side panels as shown. Do not remove the screws that hold the end panels. Remove the fluid container.



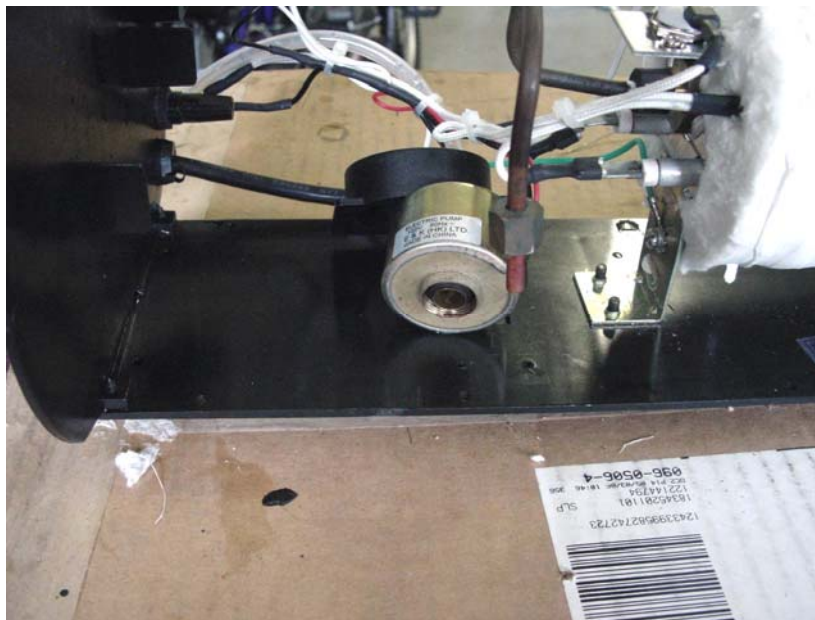
2. Remove the 2 screws that hold the pump retainer plate. Remove the retainer plate.



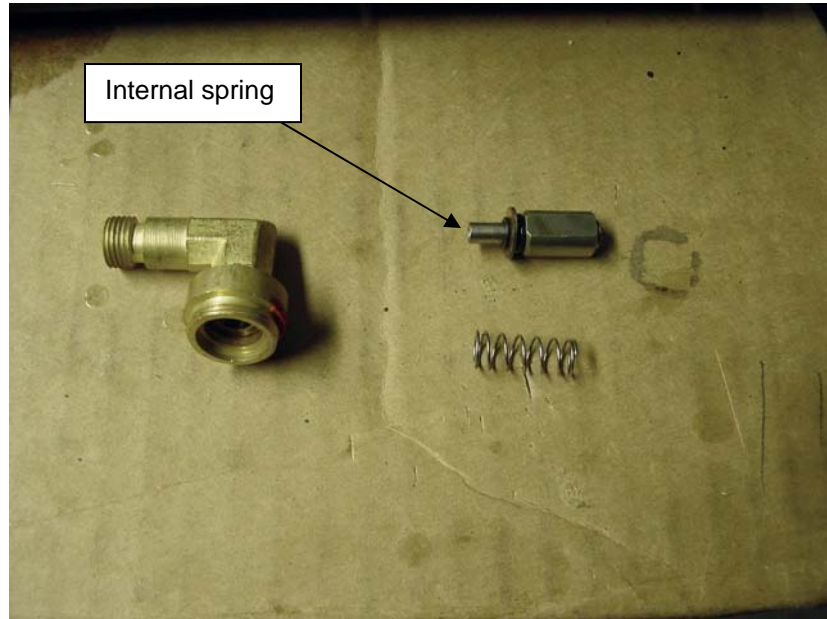
3. Remove the 2 screws that hold the pump bracket. Lift the bracket out of the bottom panel. The pump body can be pressed out of the bracket.



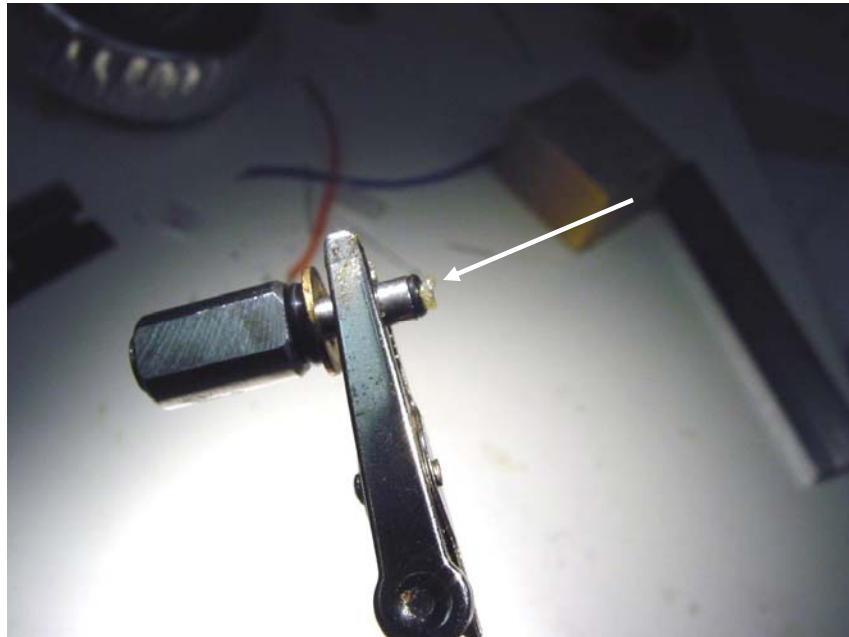
4. Use a wrench to carefully remove the brass tube fitting from the elbow fitting. This fitting may be very tight.



5. Lift the tube out of the elbow fitting. Rotate the elbow to remove it from the pump body. Caution: Depending on the nature of the pump failure, there may be small parts inside the elbow fitting. Look carefully to be sure that no parts fall out and get lost. There is a spring inside of the plunger. This spring may be able to fall out of the plunger. If it does, then this is your problem. Here's a pic of the parts inside the pump.



6. Your plunger should look something like this. If the cap on the end of the plunger is missing, look inside the elbow fitting. It may look like a bit of dried fog fluid. Do not lose this part!



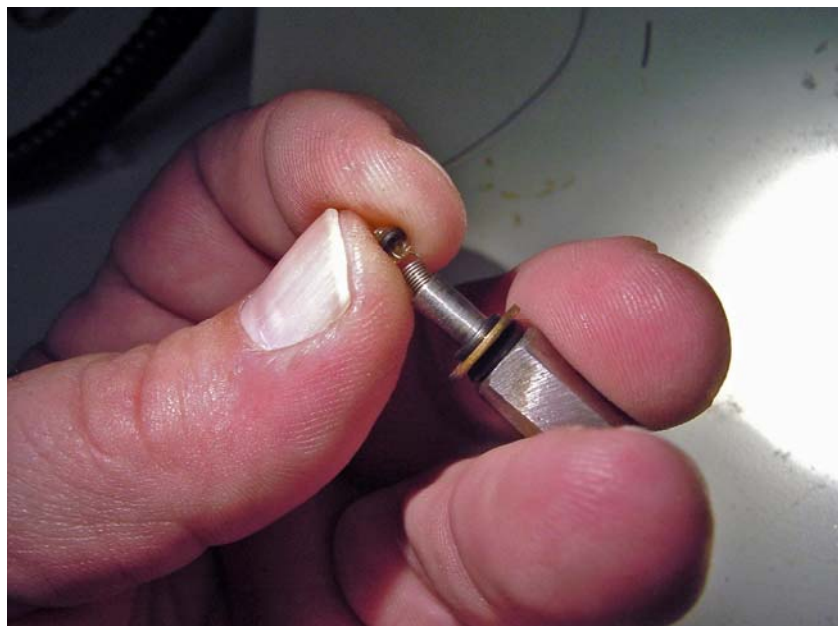


7. The reason my pump failed was that the end loop of the internal spring broke off, and the cap/O-ring fell out of the plunger. This can be fixed easily.

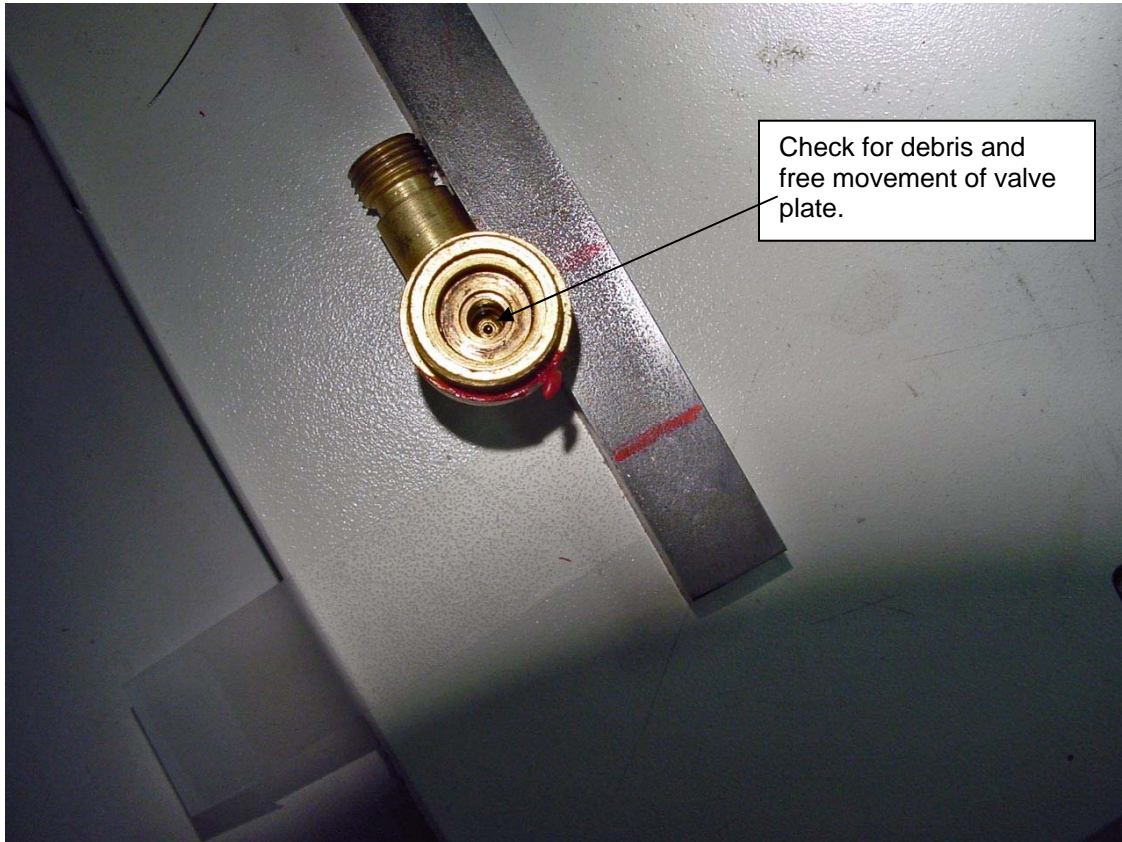


This is the portion of the spring that broke off. The small plastic cap was found in the 90° elbow fitting. The barrel of the plunger is beveled to accept an O-ring, so I found a small one and placed it on the cap, then bent the last coil of the spring upwards and threaded it through the hole in the cap. If you don't see this cap in the end of the plunger, look for it in the elbow fitting. Don't lose it – it's essential to the operation of the pump.

8. It's a bit difficult to get the O-ring on the cap, but keep trying and you'll get it. Use a tweezers to bend the last loop of the spring upwards as shown. Insert the spring into the plunger so that the spring loop can be hooked with a wire. Pull it out of the plunger as shown below and insert the loop through the hole in cap.



9. Now you have a repaired plunger. Check the other parts for debris, clogs etc before re-assembling the pump. Inside the elbow fitting is a check valve. It is pressed into the fitting and can't be removed. Press carefully on the valve plate (at the bottom of the fitting) with a stiff wire to make sure that it depresses and returns easily. This valve is what allows the fluid to go into the heater and prevents vaporized fog from coming back into the pump.



10. Wet all the parts with fog fluid before assembling. Insert the plunger into the pump body, large end first. Attach the elbow fitting. Tighten it back to the original position. Insert the brass tube into the elbow fitting and tighten the nut. Press the pump body back into the bracket. Position the bracket and screw it onto the baseplate. Attach the pump retainer plate.
11. Using a small syringe, squirt fog fluid into the intake tube to prime the pump. Make sure that fluid has gone into the pump body. You'll get some pressure in the line, and will probably get squirted with a bit of fluid. Note: Be sure to check the outlet nozzle for clogs. Remove the nozzle with a socket wrench and clean out any bits of debris. Replace the nozzle.
12. Now to test the repair. You don't need to re-attach the covers yet. Fill the fluid bottle and place it in the pump. Screw on the cap, plug in the fogger and let it go to work. You may hear a rattle at first as the pump fills, but this should stop pretty quickly. If this was the cause of the fogger failure, you should be pumping out fog big time. If all is well, let it cool down, put the covers back on and store it as-is.



# Bourn Again Creation's Halloween Page

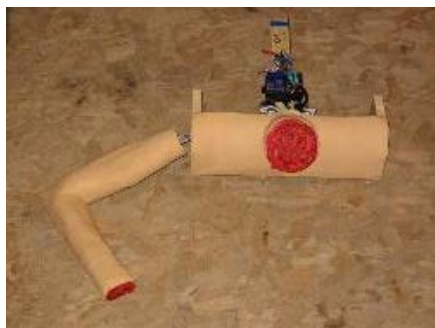
## Radio Controlled Crawling Zombie Home Page



[To the Video Page](#)

[RC Crawlers  
Around the World](#)

[The startings of a How-to Page  
for at least the mechanics](#)







# Bourno Again Creation's Halloween Page

## Graveyard Flying Ghost

October 2009

Had this idea around for a few years, but just never got around to it. Then I saw Vilething's Bellicose and how his was done. After a couple more years, decided to

put the sketches to life.

Mine, is a lighter version utilizing thin-wall PVC for the flying arm. I also like to dig holes in my yard (idea taken from RavenManor.com on their axworthy setup). I use 1" galvanized pipe 18" long with a coupling on the end. Concrete it in, and put the dirt and grass back. I use a 1" pvc cap cut down after the season to keep it clean inside.



Setting up the flying is pretty easy. Just thread it into the pipe coupling. Remember to use Never-Seize on the threads to keep the pipe from rusting to the coupling threads.



I used a 180 degree rotary actuator to swing the ghost left and right. My original design had another 90 degree



actuator above it, but with the starting degree of the pipe, it would go past vertical. So, used a 1-1/4" bore, 4" stroke air cylinder instead. It worked great!!! Even though the cylinder is dual port, using pressure back down was too jerky, and re-plumbed it for gravity down.

Wrote a 1 minute program for the two air solenoids and just looped that.

# Bourn Again Creation's Halloween Page

## *Leaping Ground Breaker*



### Mark II version 5-25-09

Added rotary actuator, I haven't used these in awhile and thought this project would be a good match for actuating the scissor mechanism.

Also, added a 1" stroke air cylinder to tilt the head down and up.

Mocked up the arms for their appropriate movement.





### Mark II version 5-16-09

As said, I scrapped the internal version and redesigned to have the scissor mechanism located behind the torso. Decided to kill the idea for now on the raising and lowering of the torso from and to the ground.

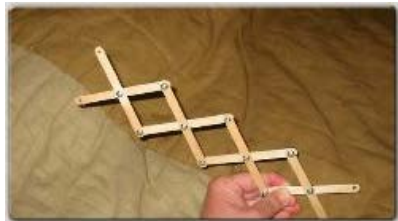
yes, I spend much time playing with the popsicle scissor toy. I liked the scissor action and then dawned on me how to move the torso to the front and keep it solidly mounted and follow the scissor angular movement.

The larger scissor mechanism is much nicer and have the arm raising and lowering worked in with the leap action.

With every idea, some goofing around must be needed of course.

No autocad or 4 bar simulation on this one, this time.

Popsicle mechanics !!!!!



### Mark I version 5-2-09 "SCRAPPED"

My original idea was to keep the mechanism inside the ground breaker torso. It was also going to lay face down into the grass, raise up, and then leap forward.

It was just too much a pain to try and keep compacted and too much linkages to get the leap distance.





**This how-to is intended for private individuals to make and use at their home or haunt and not for making and selling of this author's design.**

Page One  
The Initial idea and Concept Page  
onto [First Set-up of the Left/Right Line](#)  
onto [Pics of the Prototype Testing](#)  
and onto [Final Design used Halloween 2005](#)

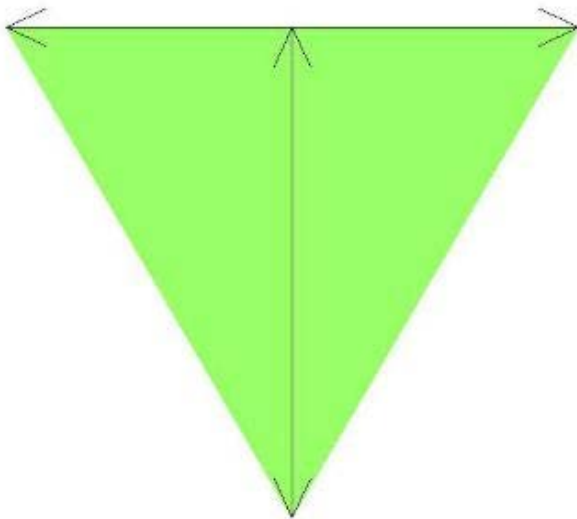
[Video Page of the Flying Ghost](#)

I had been tinkering around with the idea of making [Phantasm's coordinate ghost](#) system more simple (ie: cheaper) for the standard home haunt. This system though would not be able to support an FCG as their indoor system could. So, this is my page on how-to make a flying ghost though an axworthy system would be much simpler.

After modeling a few different ideas, it came apparent that the best, cheapest way would end up using a triangle shape for the flying area. The downside, well only half the area of a square area.

The triangle area provides these advantages:

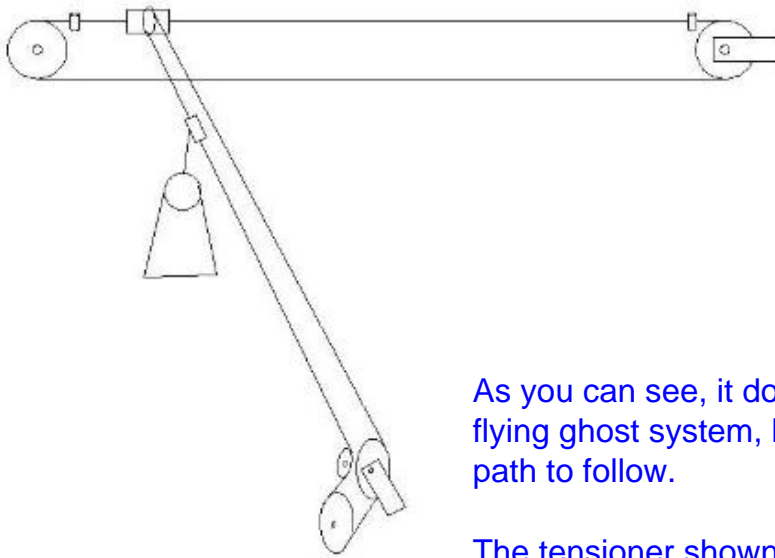
- Provides X and Y flying paths
- The above paths would require only 2 lines
- The above lines would require only 2 motors



As you can see, the green shaded area is the ghost's room to fly around in.

I tried to figure out a method to make a square flying area, but decided to use the Keep It Simple Stupid technique.

My preliminary sketch of the pulley system for the controlled ghost flying. The left/right line has limit stops for end of movement. The in/out line connected to the left/right line has a slip mechanism for the ghost when it gets to the end of its movement.



As you can see, it does use some aspects of the Axxworthy flying ghost system, but provides more than just a single path to follow.

The tensioner shown here is just something to put on paper, so this could change when I get around to building this.

Some preliminary specs:

#### Pulleys

- 12" - 16" in diameter for the drives

#### Motor

- decent flying speed, so would like 200 rpms or better. Ideally, I would like to hit 15 feet per second at full speed which would be zooming along pretty good. Well, that was a good idea I thought, but ended up slowing it down more to make it more controllable.

I decided on this [motor](#) from Surplus Center. Will report on whether it was a good choice or not.



#### Motor specs:

- 185 RPM
  - 115 VAC
  - 0.85 amps
  - Intermittent duty
  - Shpg. 10 lbs.
- Reversible  
Shaft 1/2" diam. x 1-1/8" w/flat  
4 hole face mount  
6" x 3-1/2" x 3-1/2"

Got the motor in 12-10-04. The torque with a 12" pulley seems fine by applying 'palm pressure' to it. The motor noise is acceptable to me as it doesn't get the 'geary' sound. It just sounds more like a louder Dayton motor.

It changes direction directions nicely and with good torque during that too.

### [onto First Set-up of the Left/Right Line](#)

Hope you enjoyed the annoying little flying ghost.





## *Skelerector Home Page*

[Onto Page 2 for some higher res pics](#)

[To Video Page](#)

[How-To Pages](#)

[Added Arm Action](#)

Here is my latest project, a Skelerector (summer/fall 2006).

A big thanks to Brad Fraley and his [BooPack Software](#)

This software allowed me to design the 4-bar linkage pretty much exactly how I wanted it after I changed my mind several times. But, the dimensions worked as predicted each time too and that is the most important part.

Directly below is the .bar file I used for designing my skelerector. Feel free to download it and play with it for your needs. These dimensions were specifically tailored for the Menards skeleton.

[final\\_design.bar](#)

The main dimensions needed for the design are:

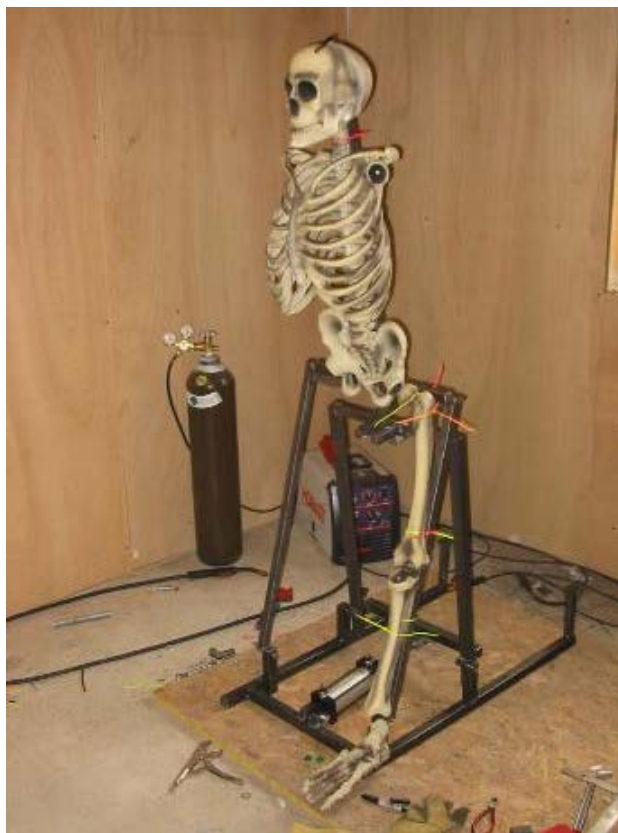
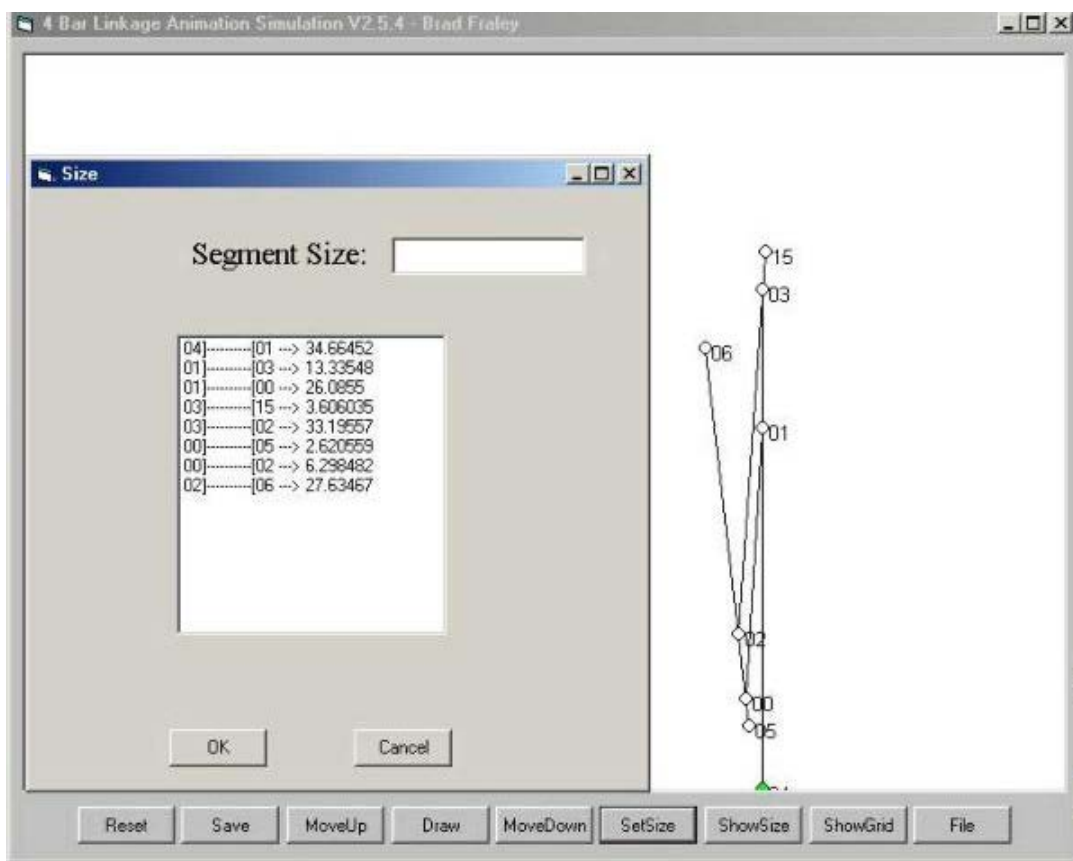
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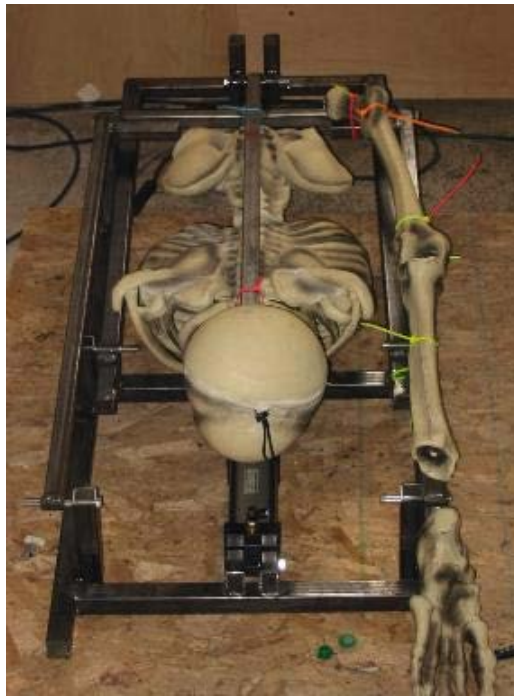
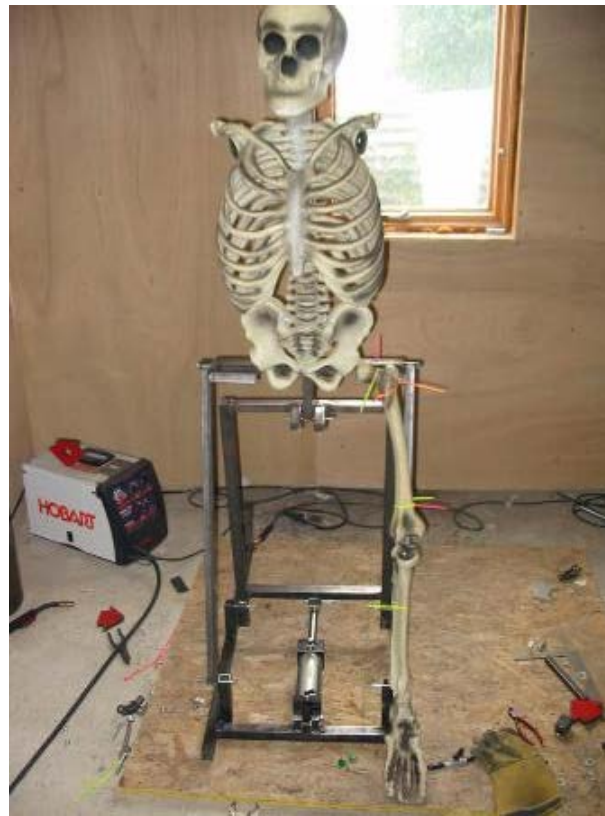
01-03

Shown in the Set Size table are the dimensions (well rounded some) for the skelerector I built.



An important item shown by the arrow is having the forward/upper (point 2 from diagram above) horizontal piece to have its pivoting at the ends with the torso bar welded to it then.

I welded a couple small pieces just below the pivoting area so I could zip tie the upper leg bone onto.



In my own personal design, I vertically offset the 4-bar system to allow the lower leg bone to be in line with the foot flat on the ground.

This is also allowing me to try a more "off the wall" air cylinder connection setup than what I have seen done by others.

Yes, I like to do things differently. What fun and less frustration would it be iif just copying a tried and true method. :-)







[Click here to go to the video page which shows the 3 programs it runs](#)

The prop uses 3 air cylinders and 1 rotary actuator the arm movements. The cylinders are plumbed to 24Vdc 5-port solenoids which are in turn wired to a Parallax SX-48 proto-board.

The SX48 program can be downloaded [scarecrow\\_program.txt](#)



Pneumatic arm beginnings









Having a skeleton that pops out of a coffin is always a pretty cool thing. Having room to store it is something else though.

This Halloween 2005, I decided to build a half-coffin that appears to be coming out of the ground. This saves on storage area too.



- Here are the 3 outside connections:
1. The air line to a pressure regulator
  2. The brown cord for plugging into 120 volts for the timers and solenoids
  3. The green cord to plug in the remote motion detector for triggering the prop



No staining yet, but you get the idea

Here shows the 2 air cylinders that will make the coffin doors open up. No pneumatics for the skeleton added at



that time or lines to these 2 cylinders



Some close-up shots of the 1" bore x 3" stroke air cylinder mounting.  
As you can see, 1-1/2" L brackets were used for the pivot end of the cylinder and at the rod end. Cheap, but so far effective.  
I did make my own rod end connector out of some aluminum chunks.



## Bourn Again Creation's Halloween Page

# Headless Horseman

This is my How To page on my undead skeleton horse halloween prop that I built. I was planning on a headless horseman for the rider, but that ended up being a modified skeleton for the rider instead.

[Page 2 "the initial look and assembly of the undead horse"](#)

[Page 3 "adding the final look and corpsing of the horse"](#)

[Page 4 "the added special effects"](#)

[Page 5 "the materials for building the horse"](#)

[Page 6 "the rider and its construction"](#)

[Page 7 "re-covering the horse with latex"](#)

For Halloween 2004

Got the idea from an ebay auction that was selling a [fiberglass horse with headless horseman rider](#), a really nice piece that will make a great addition for the person that buys it. From [Mark's Monster List](#), I did not see any project that encompassed both a full-sized horse and rider.

I decided to start with an undead rearing skeleton horse first and trying to keep the build possible for others to follow along, I decided to use PVC tubing for the body structure. I thought about using steel tubing (most likely would have been cheaper) but that makes changing ideas harder in the build and not everyone has access to a welder/saw/grinders and I can always take back extra PVC connectors if need be.

Hoping this project will inspire others as I have been inspired from their ideas and passed along build reports. The project ended up being a skeleton rider whose skull I could remove to make him a headless horseman if I wanted.

[Previous Page](#)

[Home Halloween](#)

[Next Page](#)

# Team BAC page

# Skeleton Warriors



**A beginnings for an  
Army of Darkness**



As you can see, they started out as nice, fun loving 6 foot tall foam skeletons from Menards (a regional hardware store similar to Lowes or Home Depot) until a few modifications were given to them.



The shoulders were moved outward and re-glued into place. The arms and legs were pinned into place instead of just dangling by hooks. Lastly, a few teeth were removed and eye sockets given a more evil look and blackened more.



**All we lack now are some weapons to hunt down good doers.**

A simple stand made from some PVC pipe and fittings.

The bottom 3 pieces of piping are just pushed in without glue so they can be removed for less storing space.

The vertical pipe stops at the base of the skull with a zip tie around the neck to keep





the skeleton standing in place.

I did have to add a couple ground stakes to keep the skeleton from wanting to tip over in the wind.

# Fog Chiller Modification

My old fog chiller was based on the 'fog on the rock' methodology by having a tube going from the fog entrance to the exit with ice cubes surrounding it. It did well with short, quick bursts but not very well with long durations from the fog machine.

Here is my modification



The chiller now will have the right side compartment filled with ice and the fog will need to travel through the ice. To keep the fog from exiting back up through its entrance, a dryer vent should act as a one-way check valve for force the fog through the ice and hopefully chill it better for low lying fog even with long bursts.

The screen in the divider may not have been necessary, but I was bored.

I will most likely need a latch or strap to keep the lid down.



The dryer vent was placed over the incoming fog hole with silicone sealant.



The exit tube received a mesh screen over it so the ice cubes won't slide out of the ice compartment.



As mentioned, maybe not needed but I was bored and thought I would give the fog another passage way instead of just down through the top of the ice chamber.

This was all the ice I had in my freezer for the first test.

I think things still turned out pretty well as I didn't have to pulse the fogger to make low lying fog. It was kept full on (well during the re-heating cycles).



I did have some leakage around the cooler and also at the initial top entrance when the fogger would spit spatter a little fog during the re-heating.



Here is when I opened the cooler at the end of playing. As you can see, this fog isn't cooled yet since it hadn't been forced thru the ice.





## Bourn Again Creation's Halloween Page

# Haunted Tree



This was the tree I made for Halloween 2003 from seeing this [haunted tree](#) on [Mark's Monster List](#). I plan on keeping this one around, but making a more life-like tree like this [spooky tree](#) or this other [spooky tree](#) off the Monster List.

So, after I get gone with the [Headless Horseman](#) prop, I will get started on the new tree and put up some step by step pics of the build on this page.

**UNDER CONSTRUCTION**

# Web Shooter Page

My web glue gun uses the [Ad-tech HD 200](#) which provides 200 watts of heating power. The original feed mechanism was removed as it is much easier to feed the glue stick by hand for better control and constant flow.

The copper used was 1/4" and as you can see, no fancy internal routing for me.



One of my skelerectors after webbing.















# Bourn Again Creation's Halloween Page

## Headless Horseman Prop # 2 Home Page

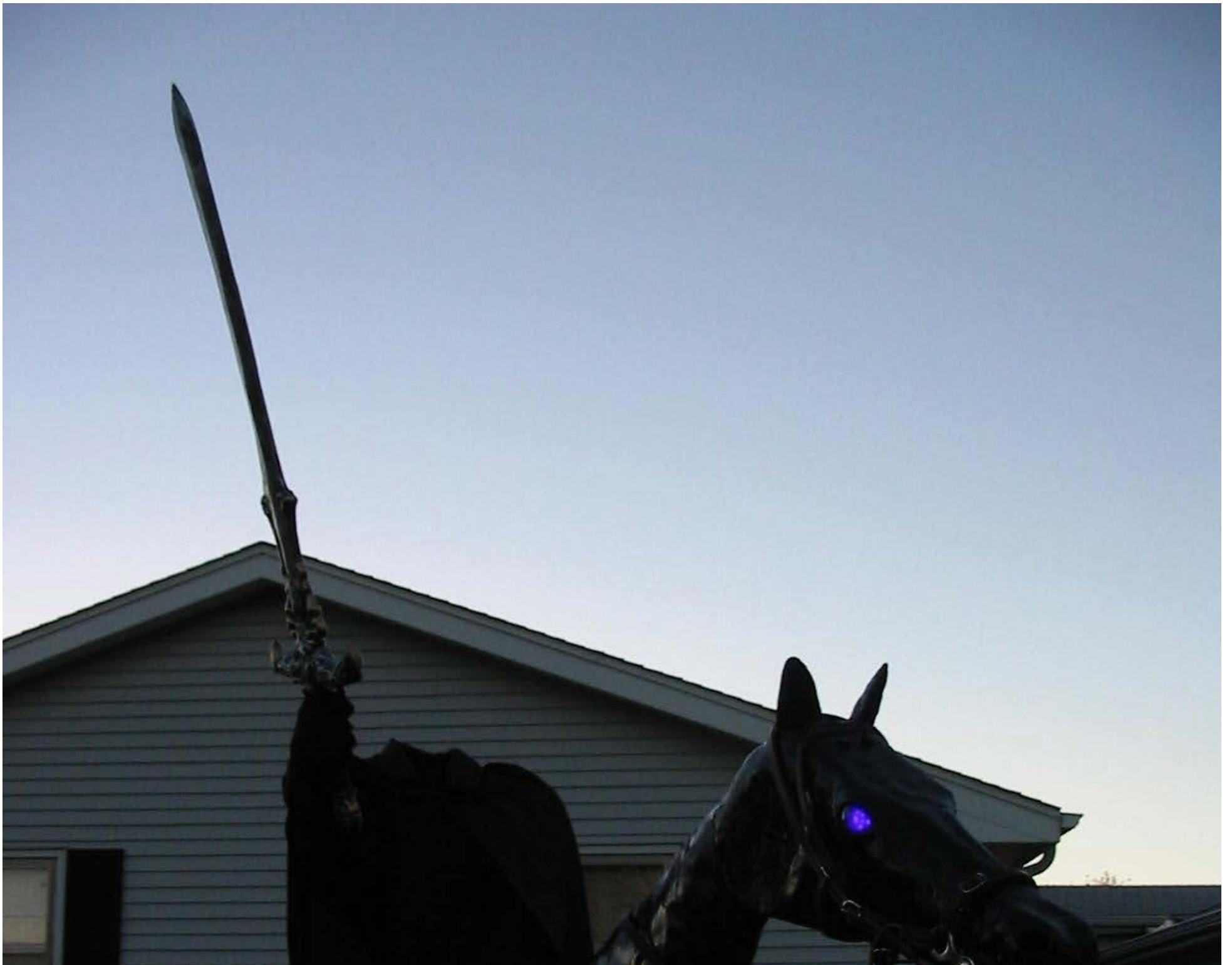








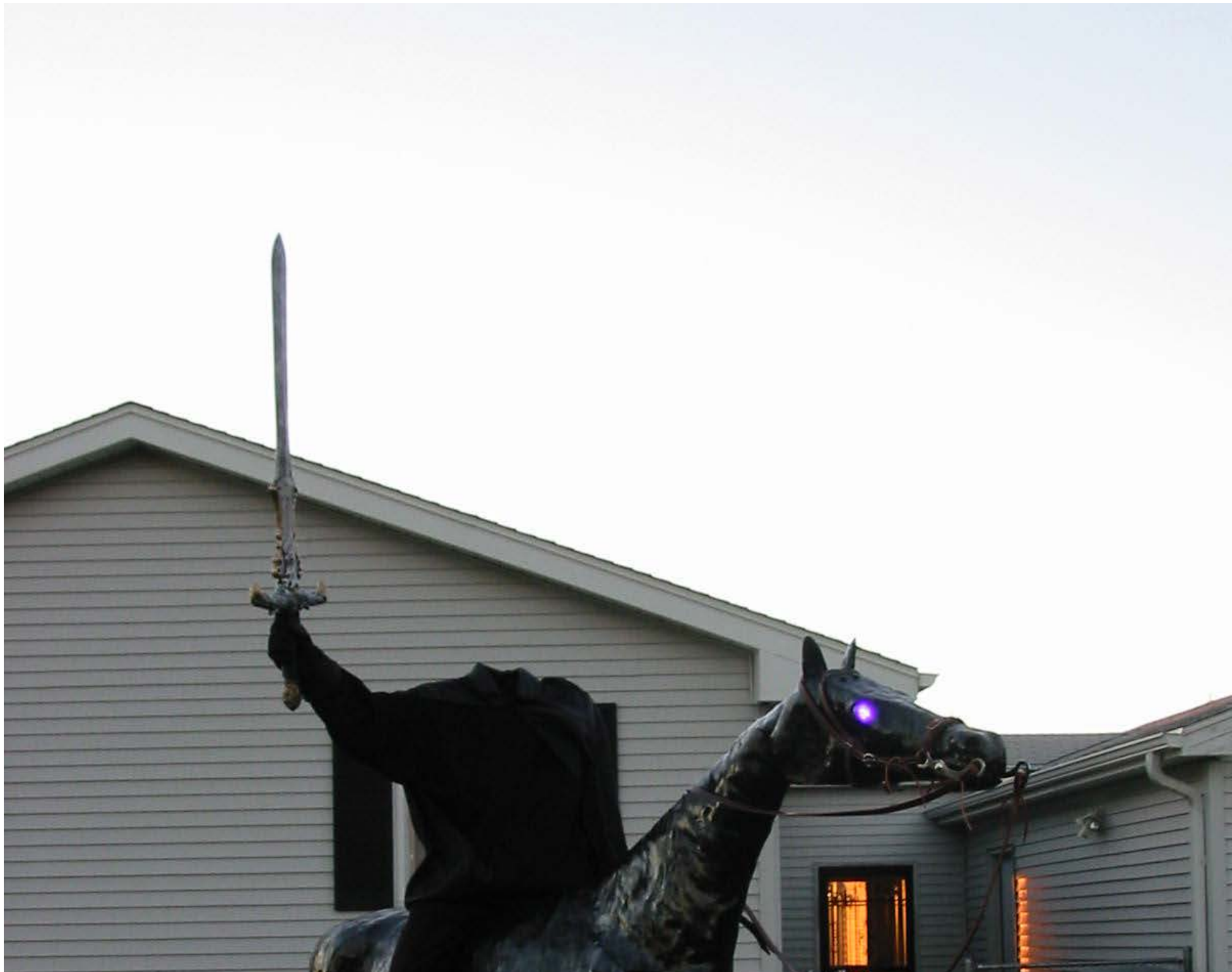


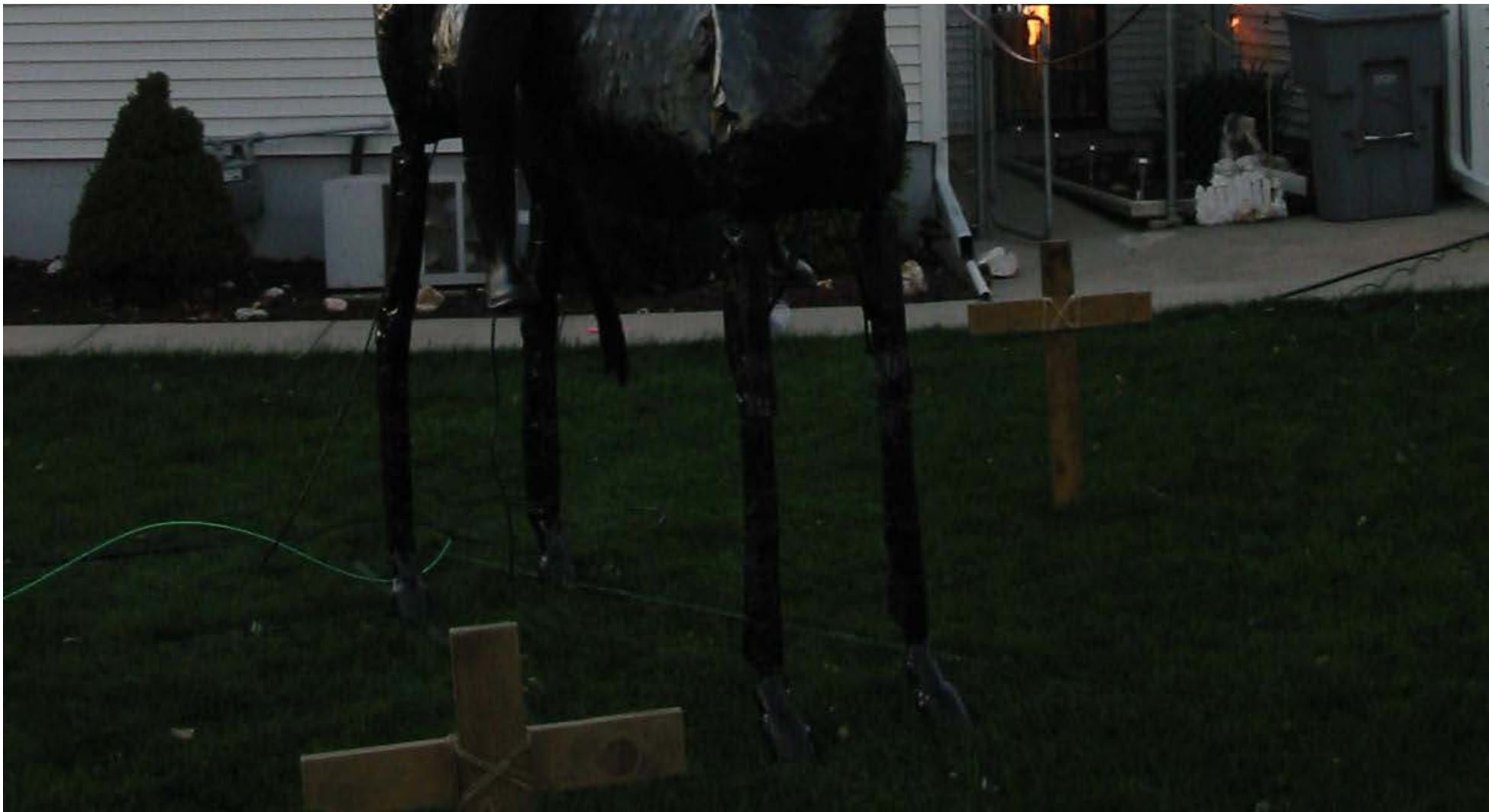




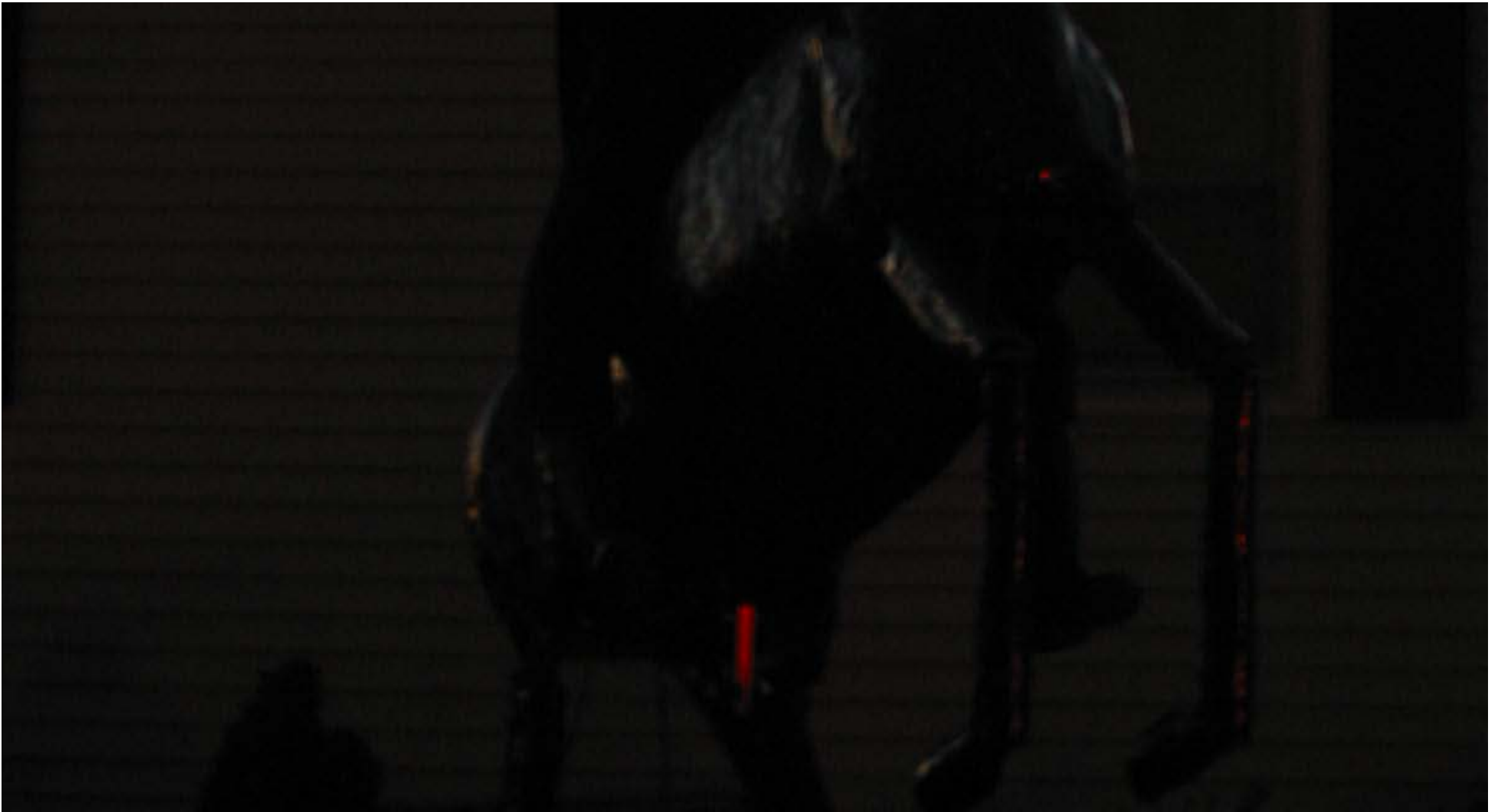












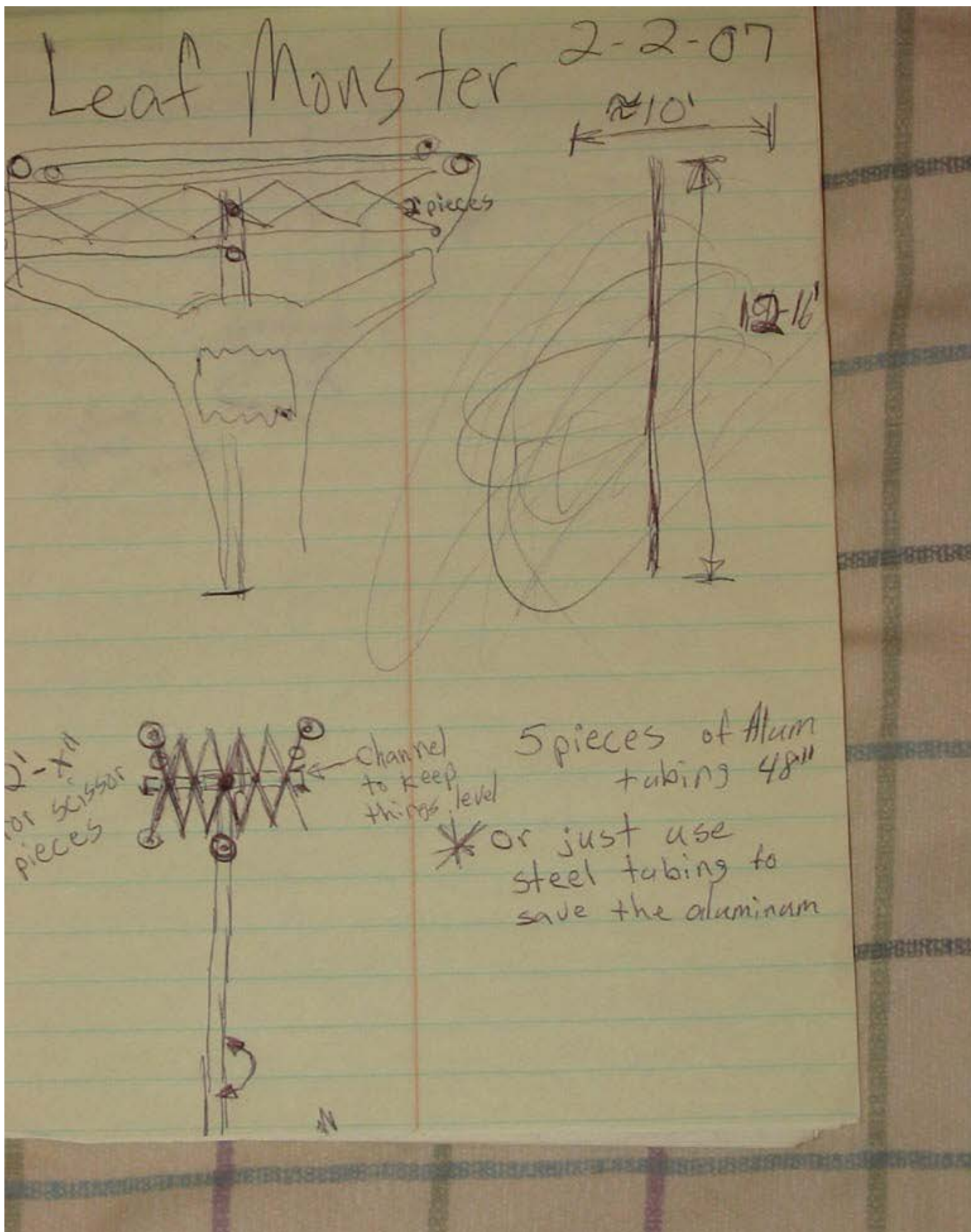






















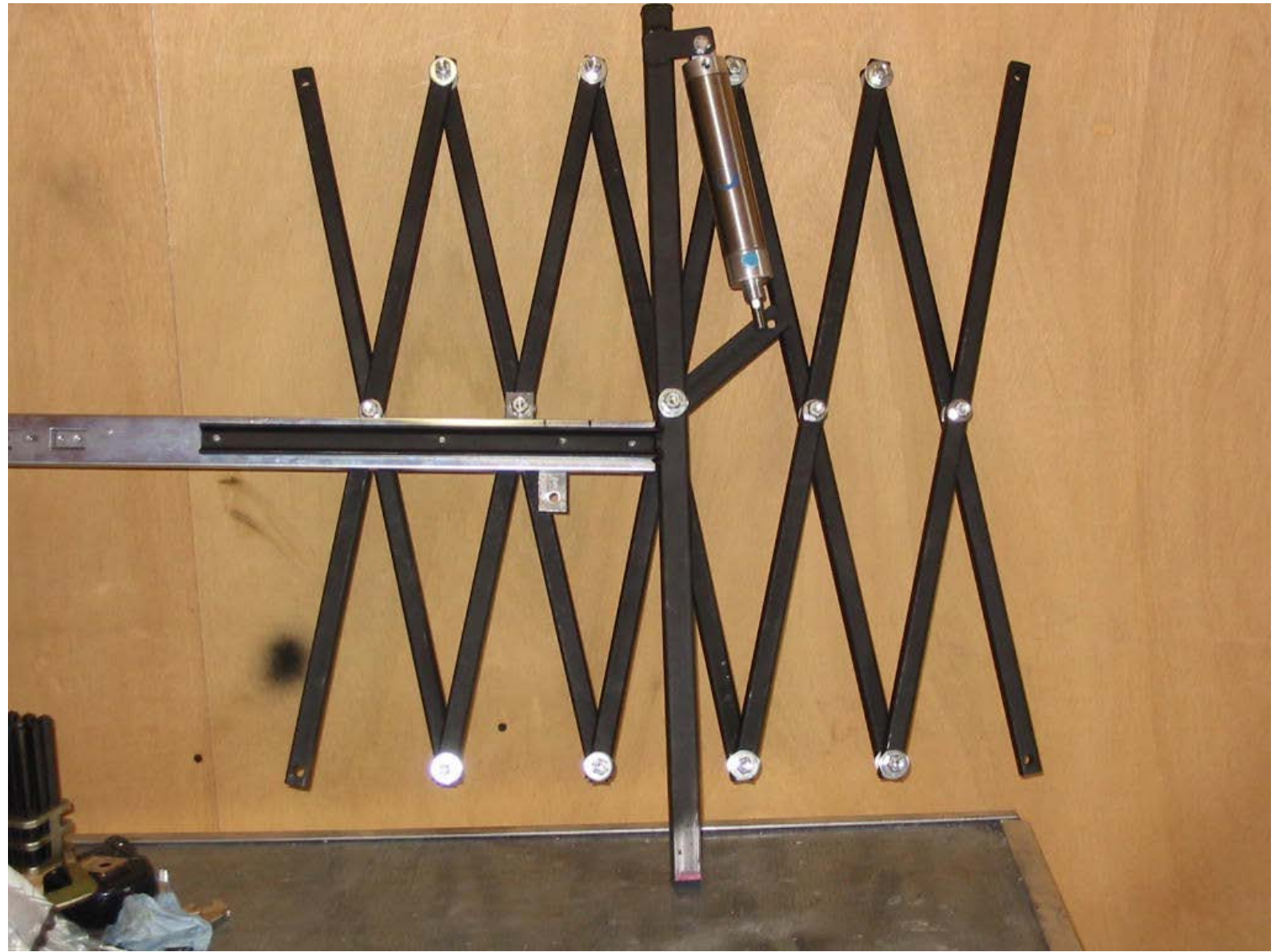
















MENARD INC.  
PURCHASE ORDER  
MENARD SKU#  
ITEM NO. 2425  
DESCRIPTION:  
COUNTRY OF  
C/NO.:





























































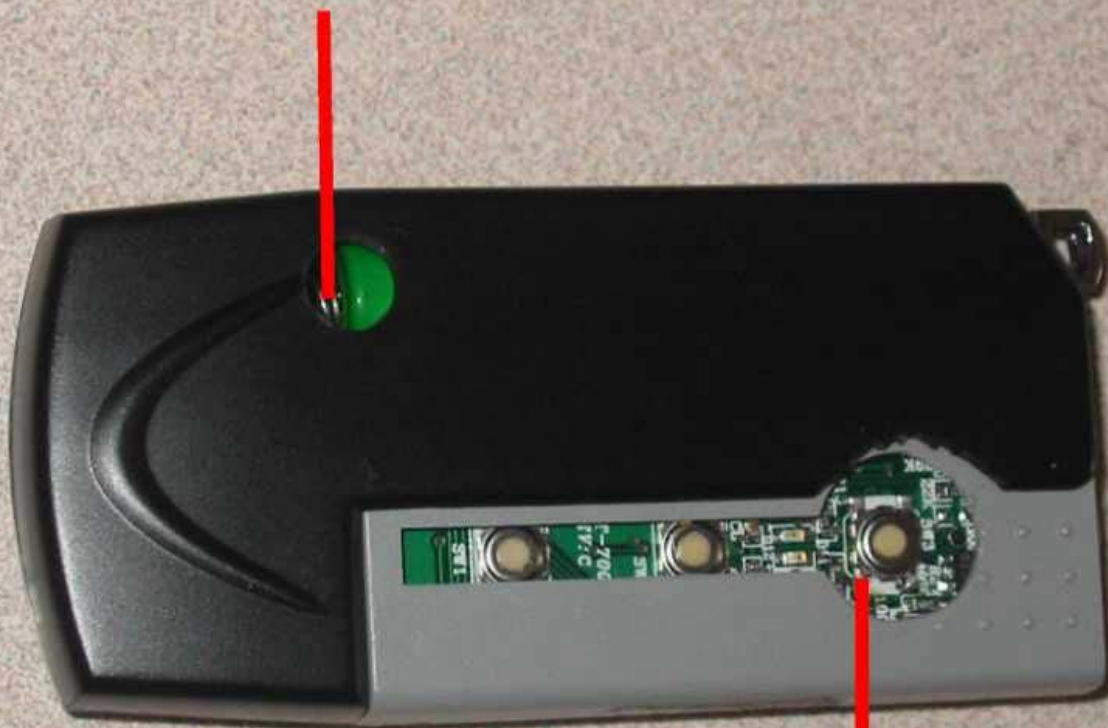








**Tie to DC negative (GND) of prop controller**



**To Driver chip terminal**

**Example: Connect to Out 0-7 of Prop-1 board**







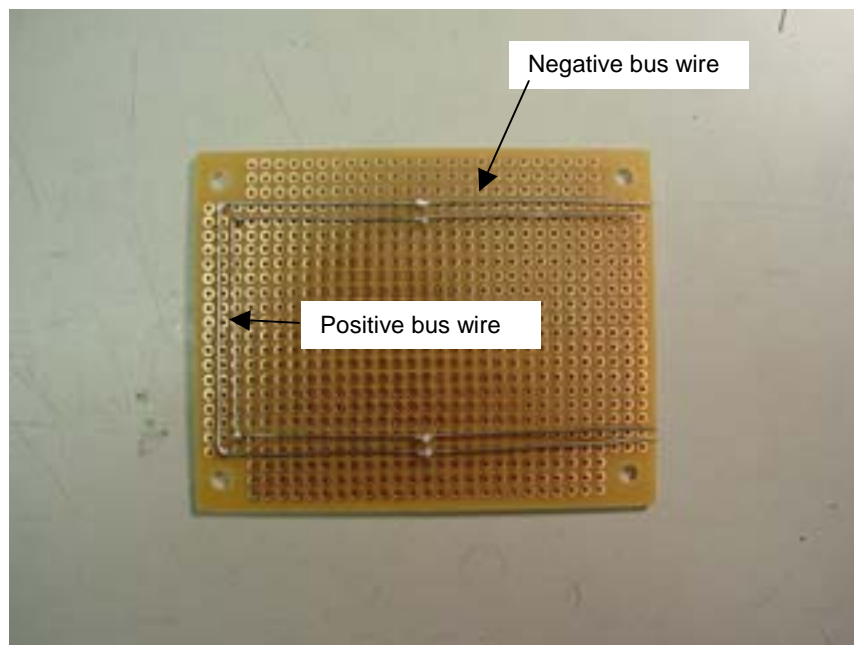
## MP3 Player Timer Board Assembly

First, read this instruction completely. Get all the parts and lay them out neatly, and get the tools you'll need:

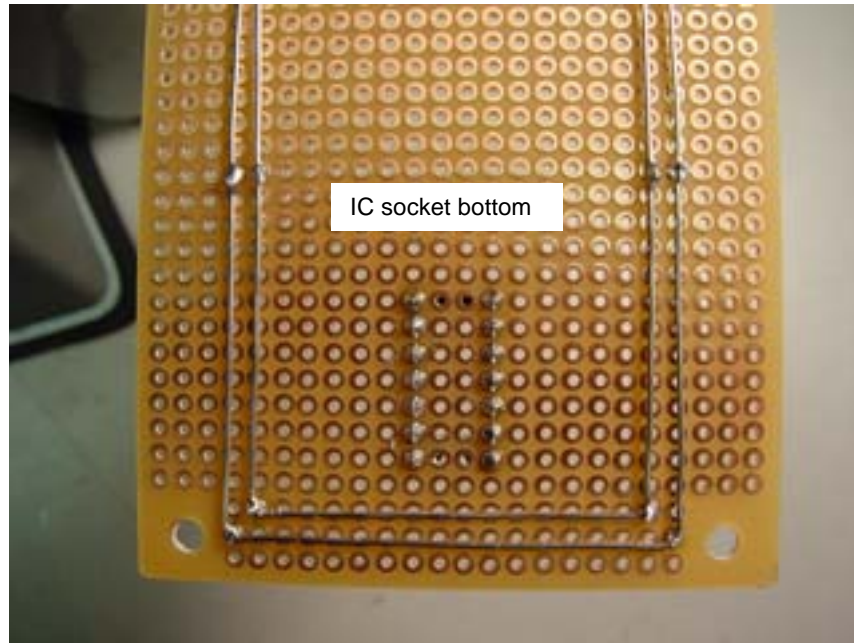
A small diagonal cutter  
A small longnose plier  
Soldering iron with a fine point tip  
22 or 24 gauge wire  
Bus wire

The locations of the components are customized for the PC-3 perf board from All Electronics. I have built this circuit on a much smaller board, but it wasn't very easy.

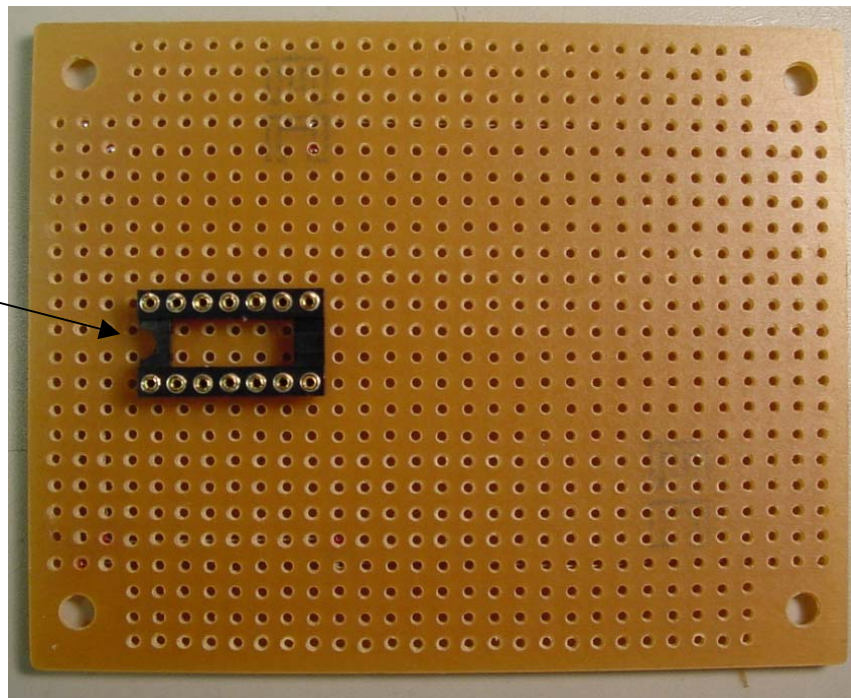
1. Lay out the positive and negative bus wires. Bend the wires to make the corners and tack in place with solder.



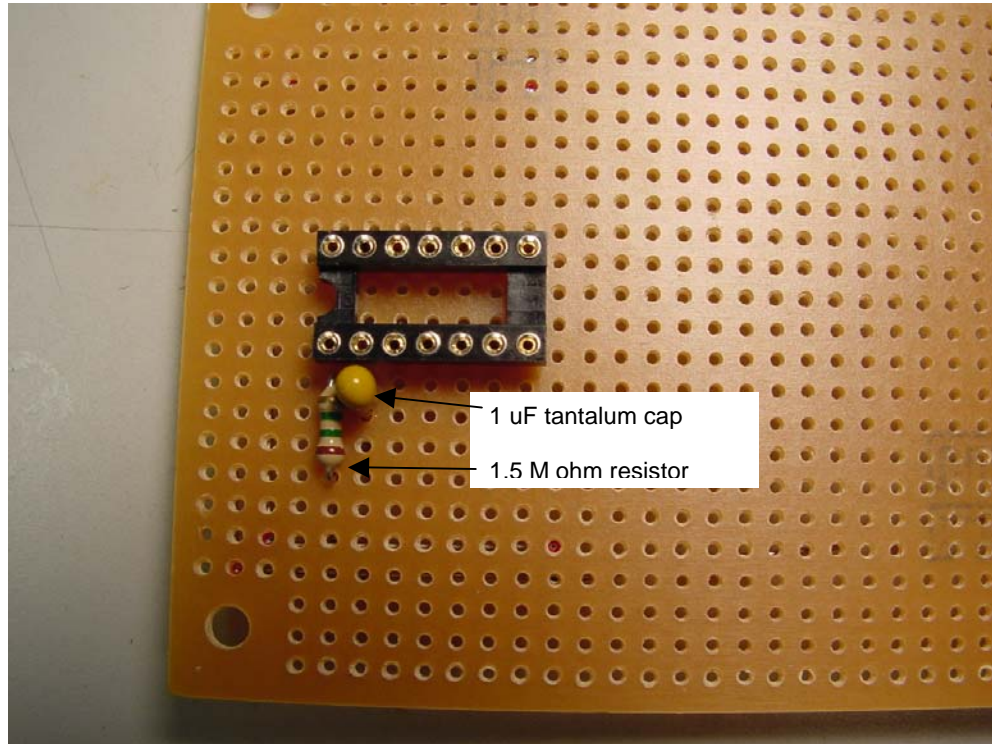
2. Install the IC socket. Note the location of the notch. Solder each pin but do not bridge any of them. Don't install the 556 chip – soldering temps will damage it.



IC socket top –  
Note location of  
notch



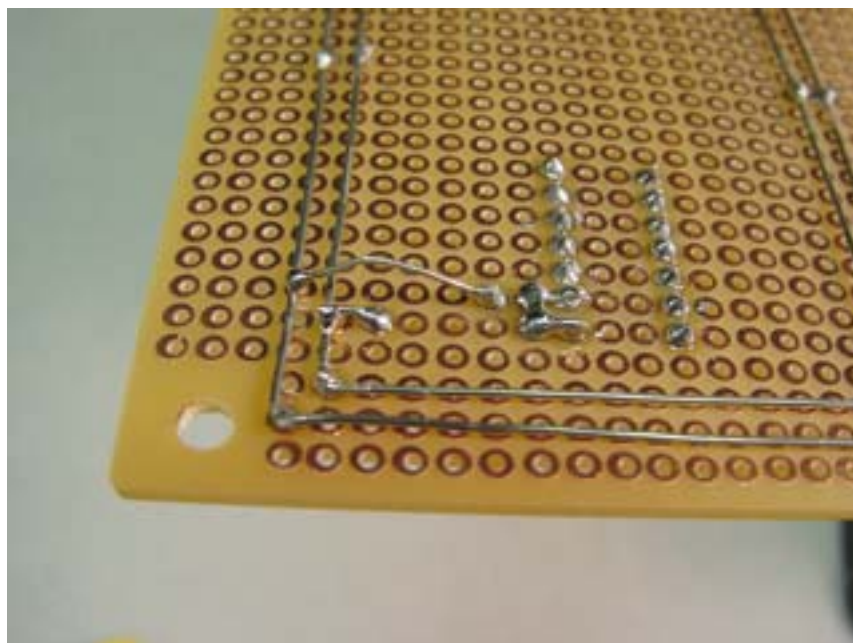
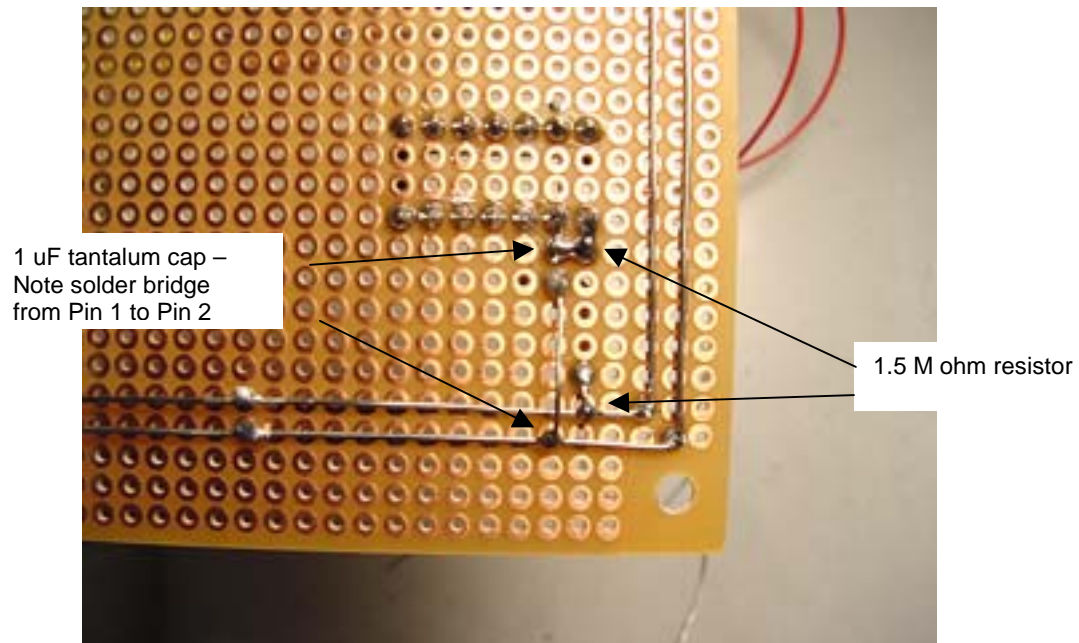
3. Install the 1  $\mu\text{F}$  tantalum cap and the 1.5 M ohm resistor. Note: this resistor is the one that sets the time required for activating the player. This cap/resistor combination sets a time of  $\sim 1.65$  secs. This time period worked for all 3 of the MP3 players I tested, but it may not work for the one(s) you have. If this should occur, email me and we'll work through the fix.





4. Bottom view of the cap and resistor connections. Bend the negative leg of the cap to contact the negative bus wire and solder. There is also a solder bridge connecting pins 1 and 2. Solder the resistor to pin 1 and the positive bus wire.

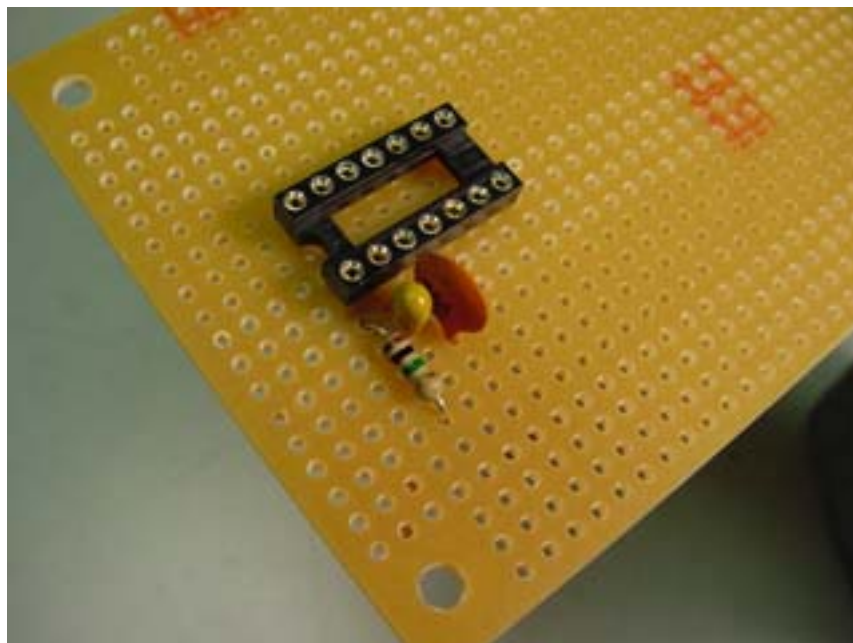
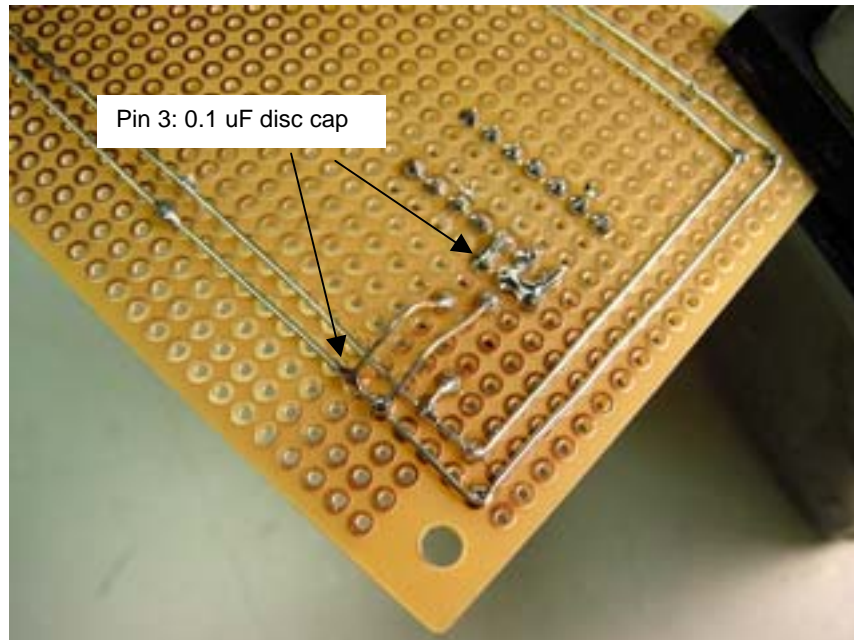
Note: Polarity counts with this capacitor. Verify that the positive side of the cap is soldered to the #2 pin. Look for a small "+" sign on one side of the cap – that side is the positive leg.



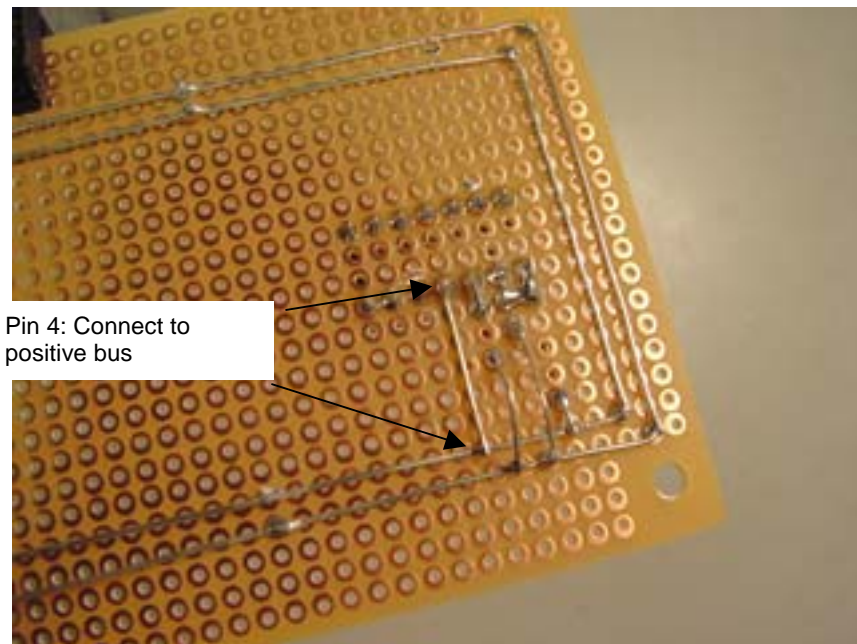
Side view showing bus wire bridge

5. Install the 0.1  $\mu\text{F}$  disc capacitor on pin 3. This cap does not have a polarity requirement. Solder one wire to the pin and the other to the negative bus wire.

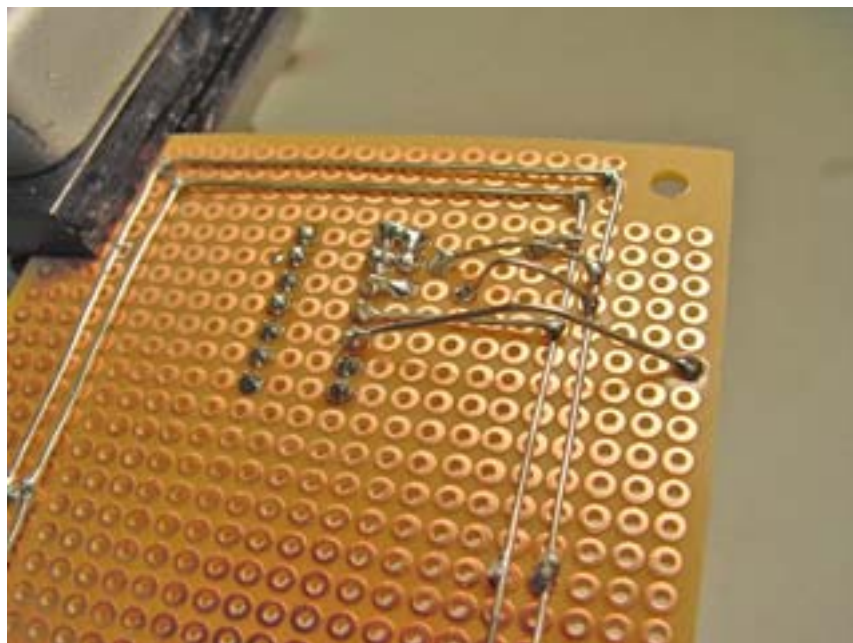
**Bottom view of the board**



6. Connect pin 4 to the positive bus wire. Cut a piece of bus wire to make the jumper.

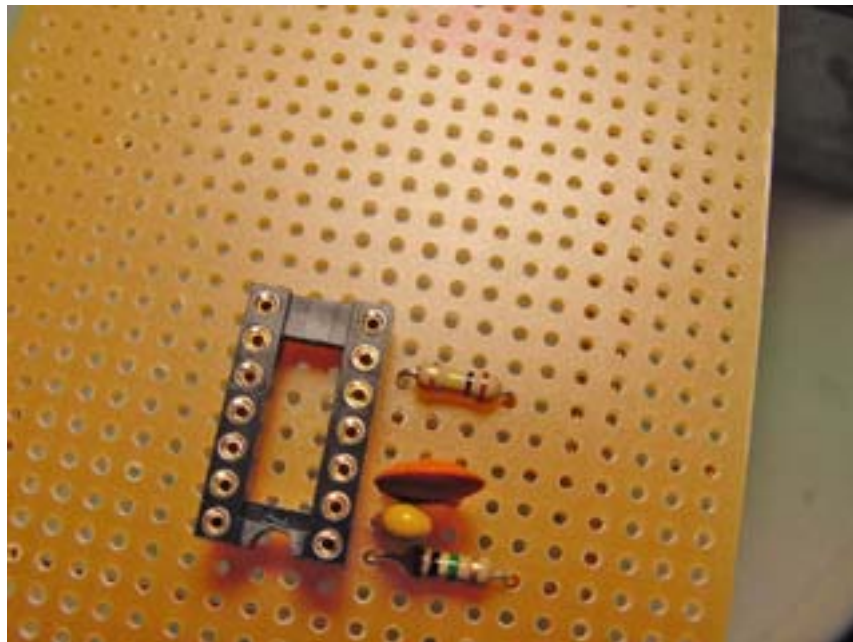
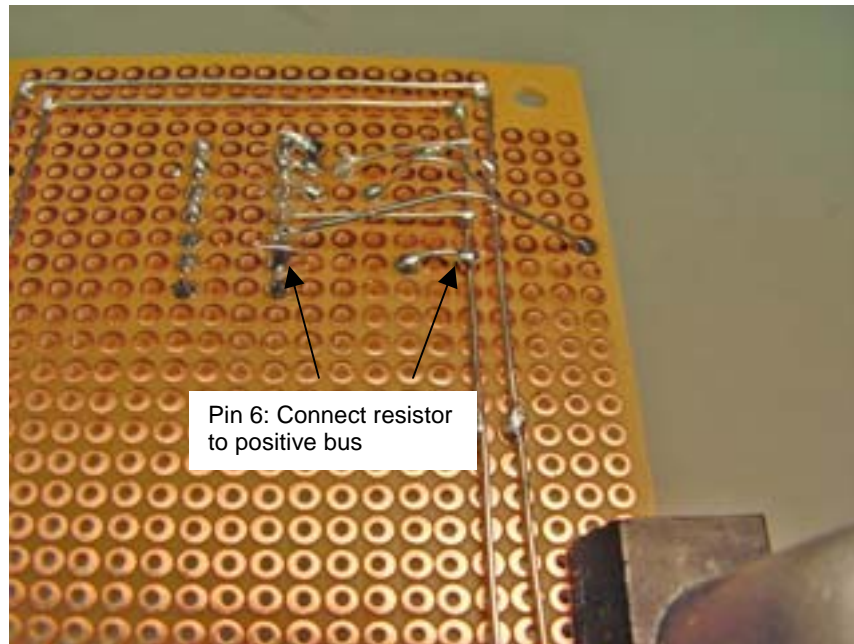


7. Jumper pin 5 to the edge of the board as shown. This is one of the IC output pins.

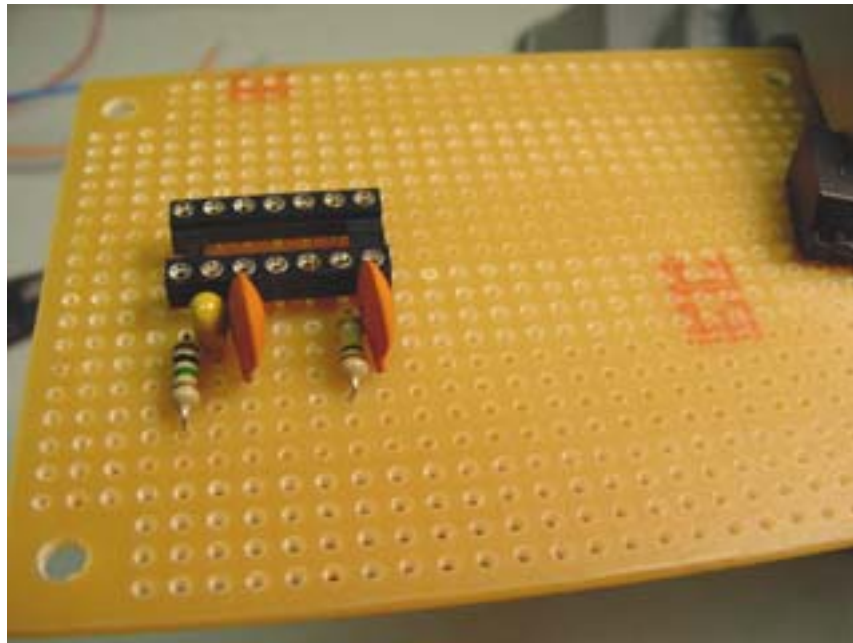
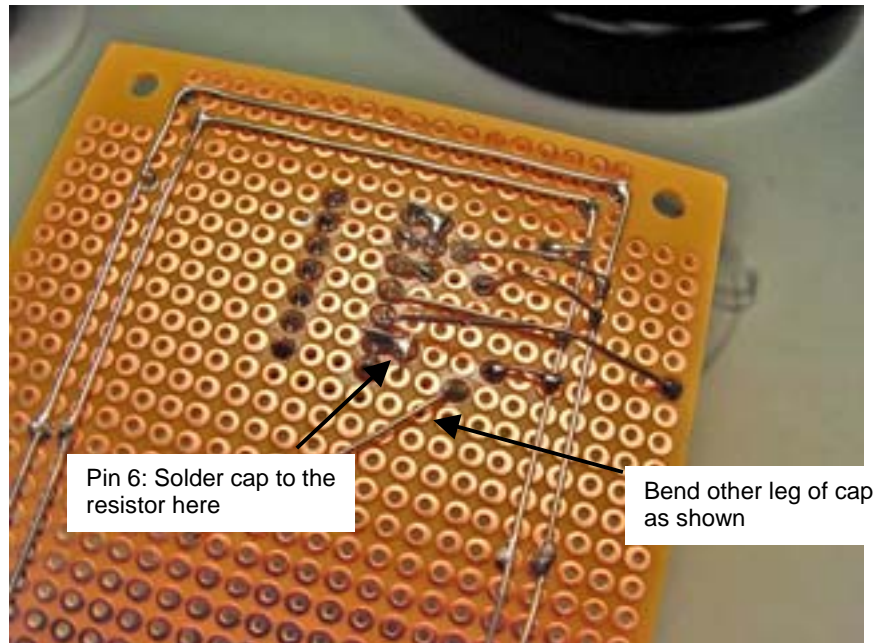




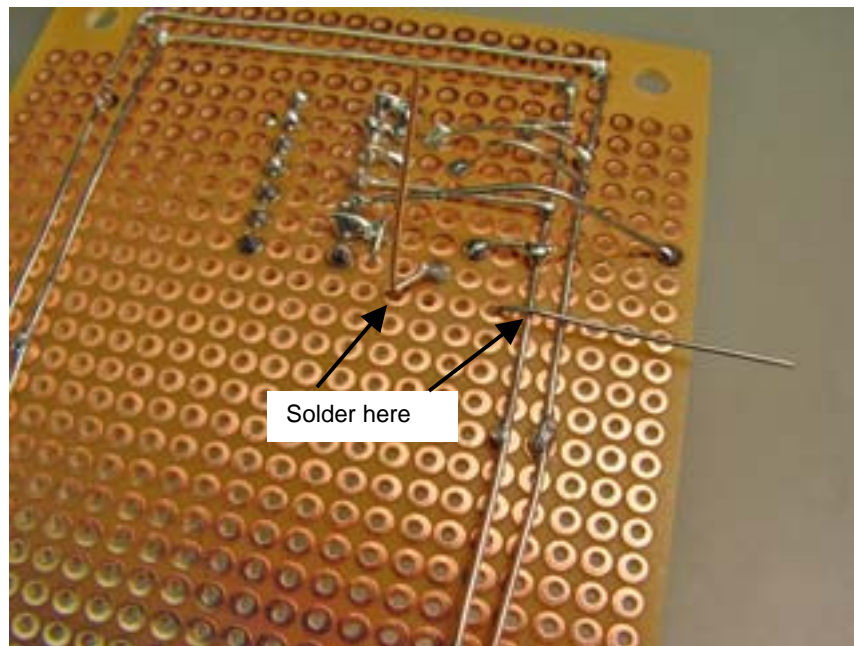
8. Install a 100K resistor at pin 6. Solder the resistor to the pin and the positive bus wire.



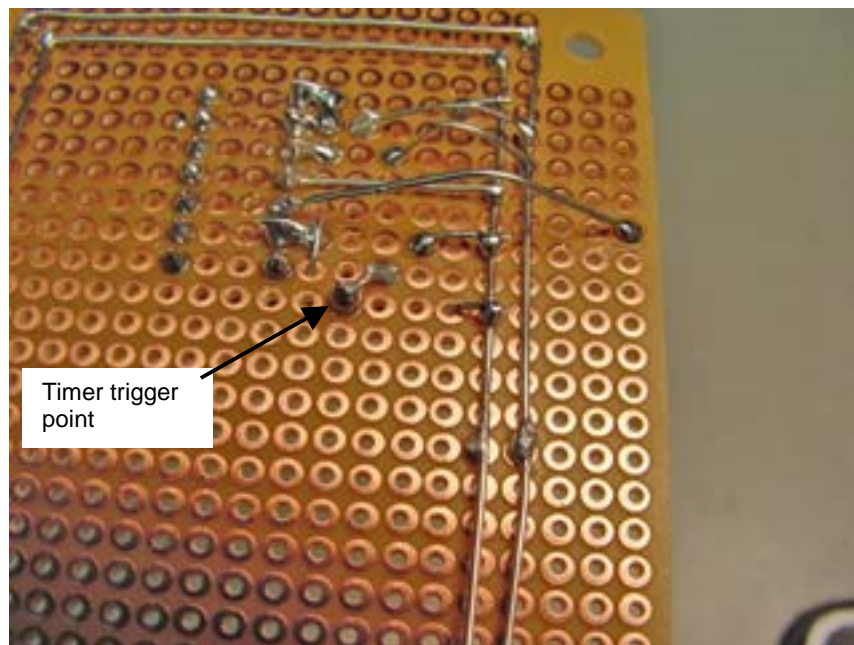
9. Install a 0.1  $\mu\text{F}$  cap as shown. One leg of the cap will be soldered to the end of the resistor nearest pin 6. Bend the legs of the cap as shown.



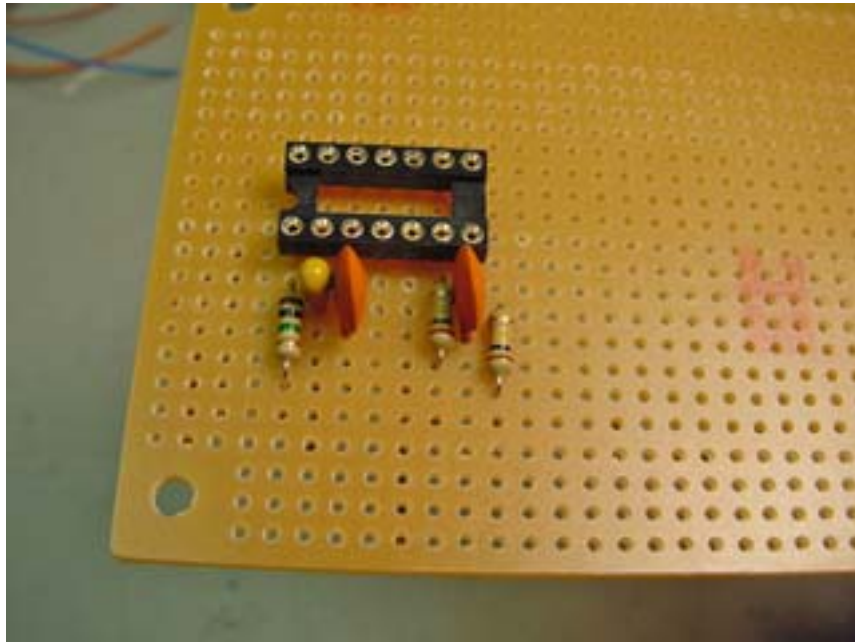
10. Solder a 100K resistor between the other side of the cap and the positive bus. Bend the legs as shown.



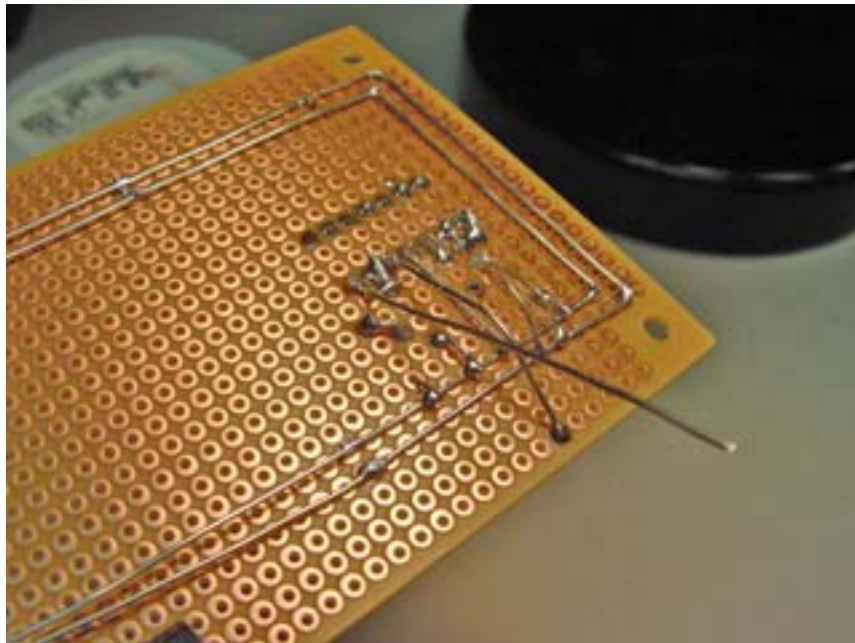
Trim the wires when finished. Note the trigger point, we'll use this later.

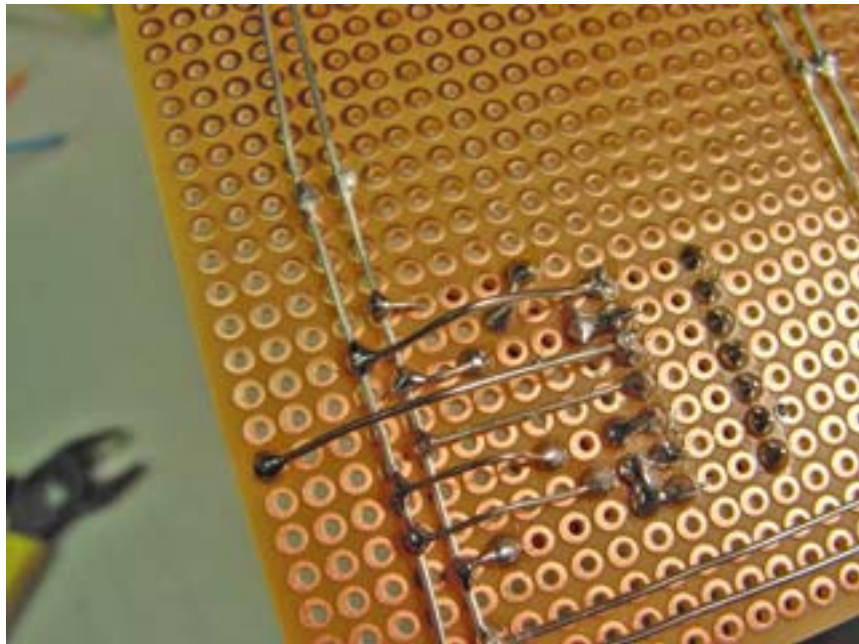
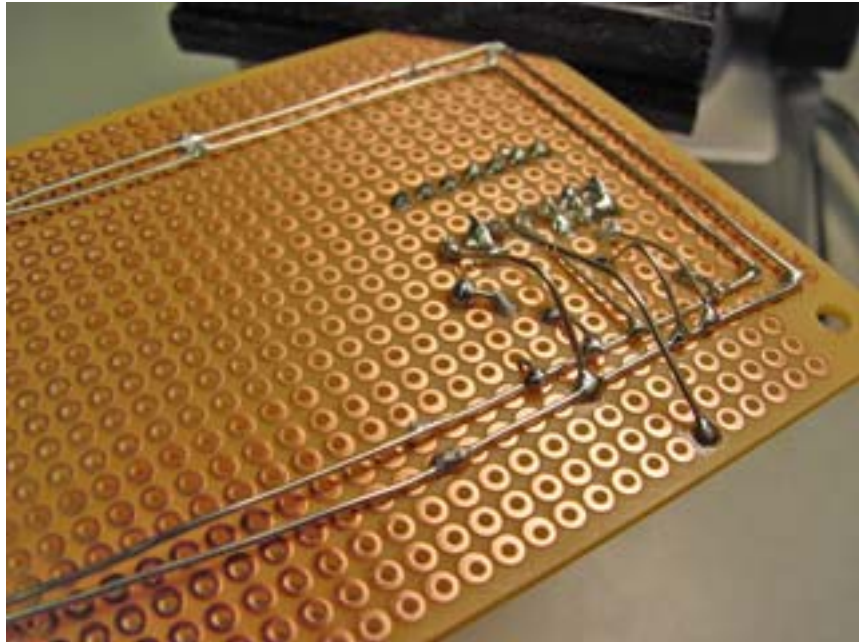




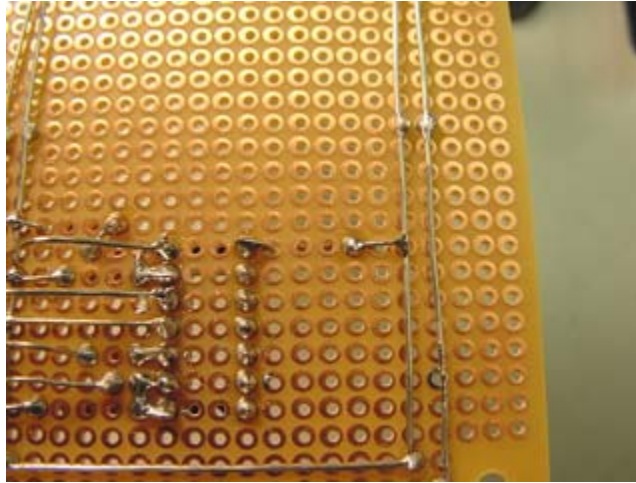


11. Bridge pin 7 to the negative bus.

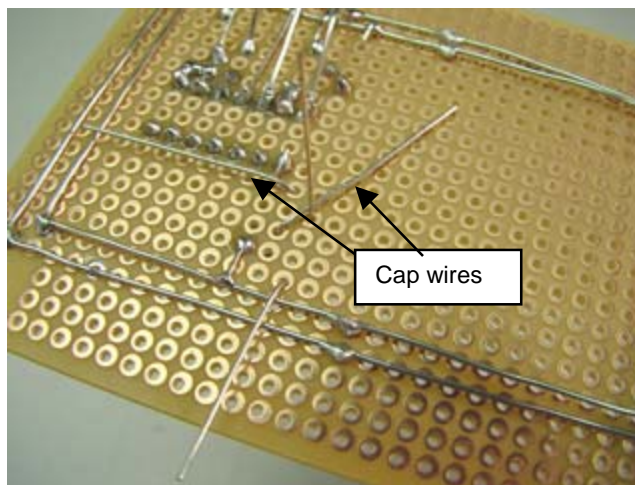




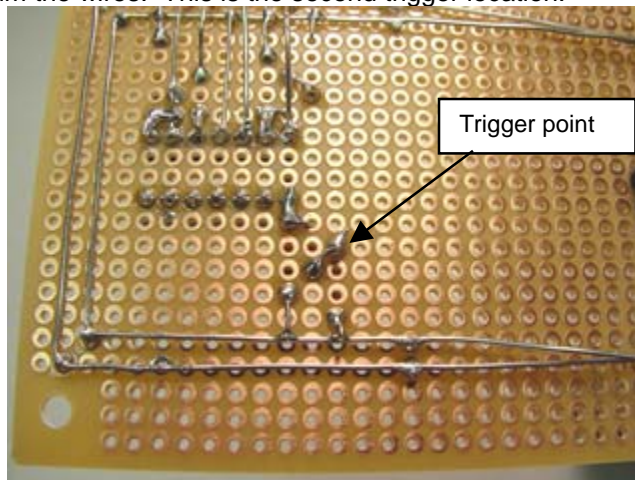
12. Now we'll duplicate the same array on the other side of the IC. Solder a 100K resistor to pin 8 and the positive bus as shown.



13. Insert a 0.1  $\mu$ F cap and another 100K resistor. Bend the wires as shown.

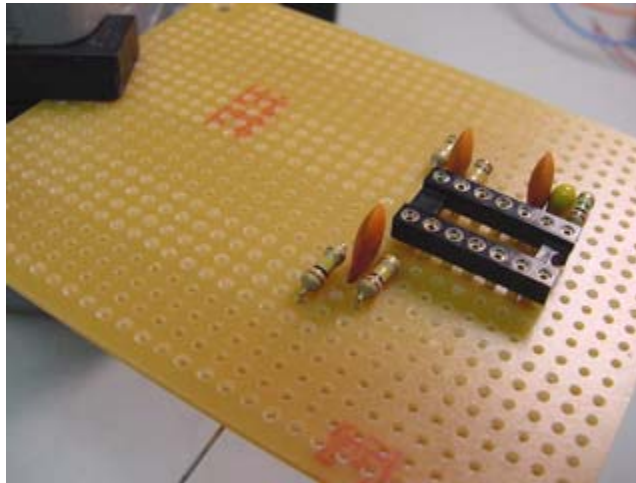


14. Solder and trim the wires. This is the second trigger location.

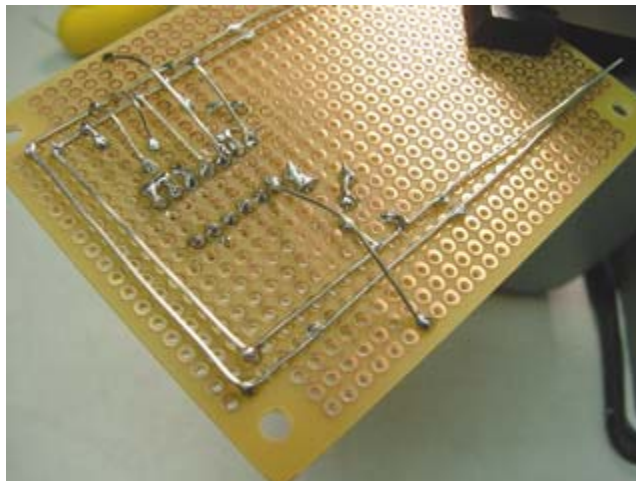




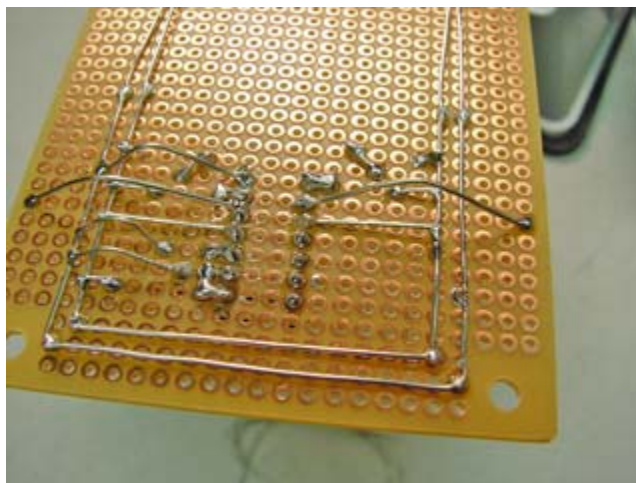
Top view



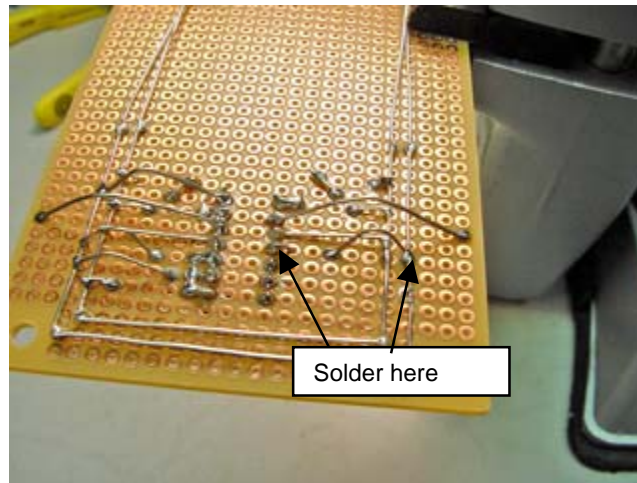
15. Jumper pin 9 to the edge of the board. This is the second IC output pin.



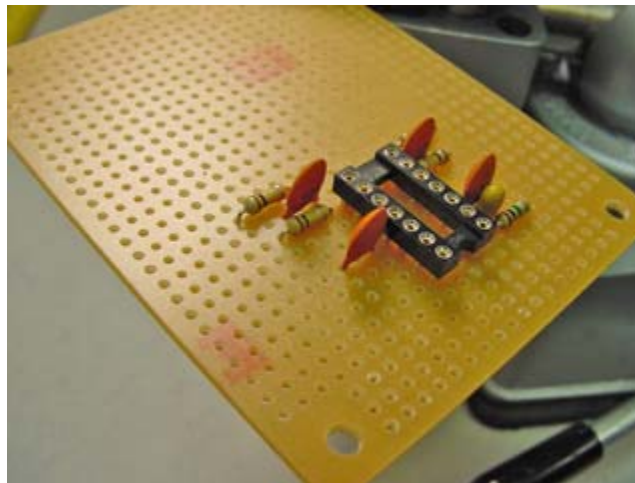
16. Connect pin 10 to the positive bus wire.



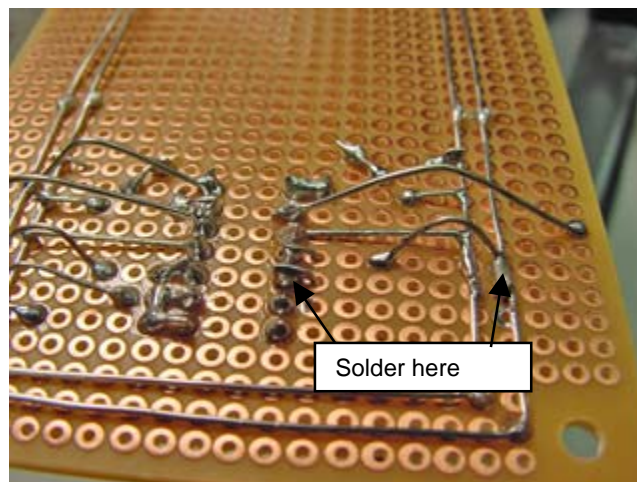
17. Install a 0.1uF cap at pin 11. Solder it to the negative bus wire as shown.



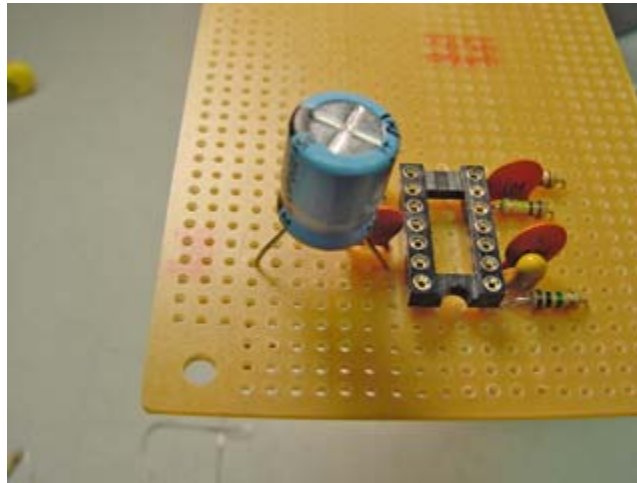
18. This is what you should have at this point.



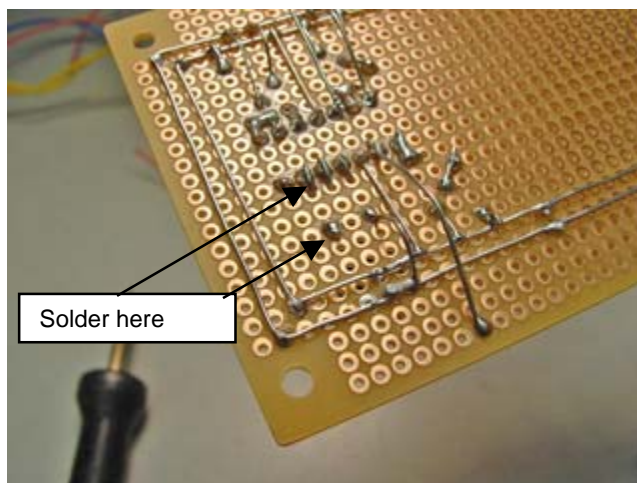
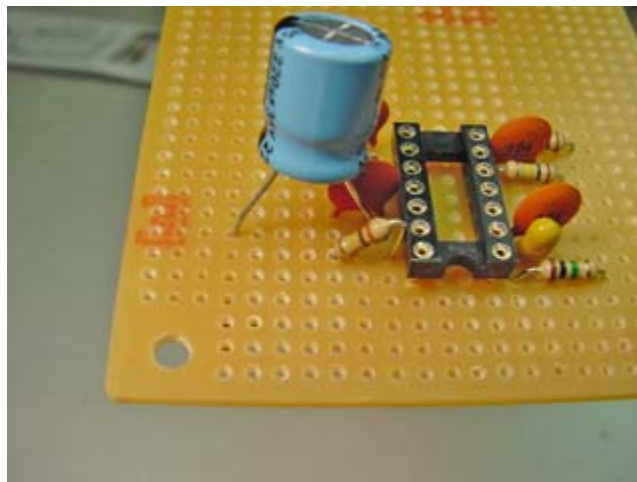
19. Connect the 220 uF cap (the large one) to pin 12 and the negative bus wire. Be sure that the "-" marks on the cap are facing the negative bus. If the polarity is incorrect, the cap can explode.



20. This is the correct position for the large capacitor.

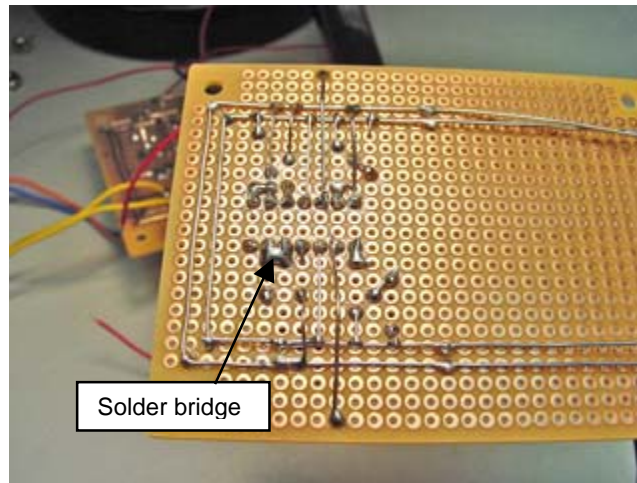


21. Insert a 100K resistor as shown. Solder one wire to pin 13 on the IC socket. Solder the remaining wire where it exits the hole and trim. This connection will be used later.

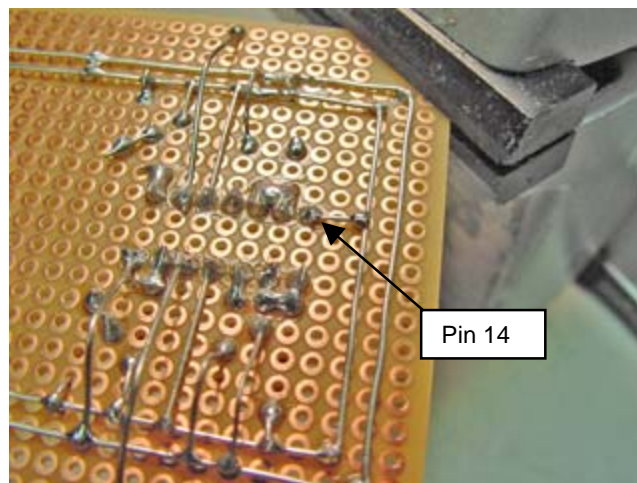




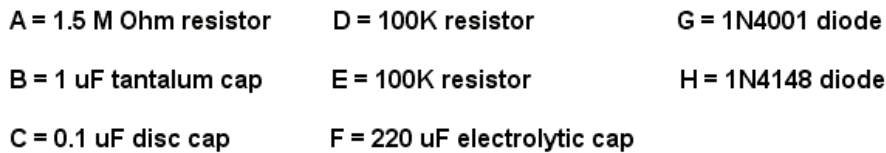
22. Create a solder bridge between pins 12 and 13 as shown.



23. Use a piece of bus wire to bridge pin 14 to the positive bus.



24. The wiring for the IC is finished and the chip can be installed in the socket. Make sure the dot on the IC is at the notched side of the socket.

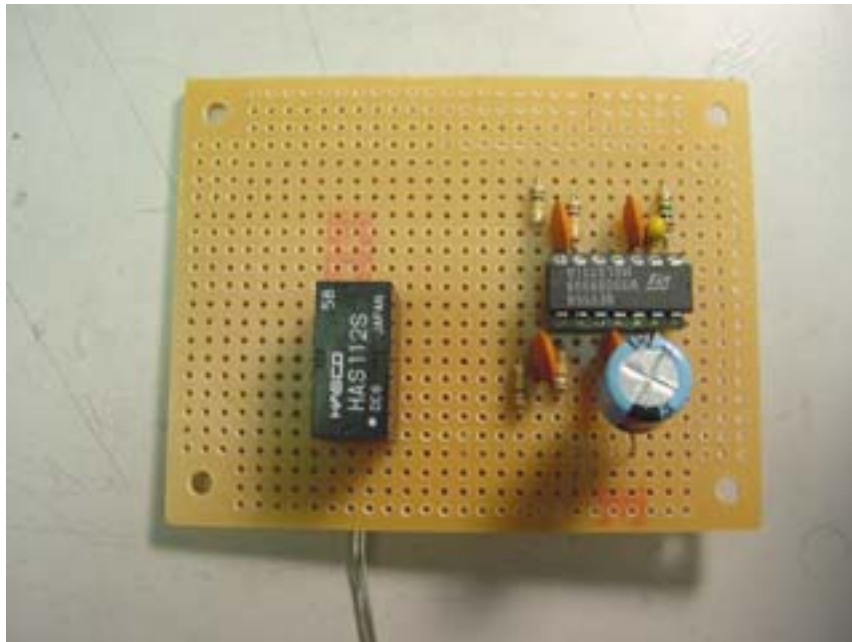
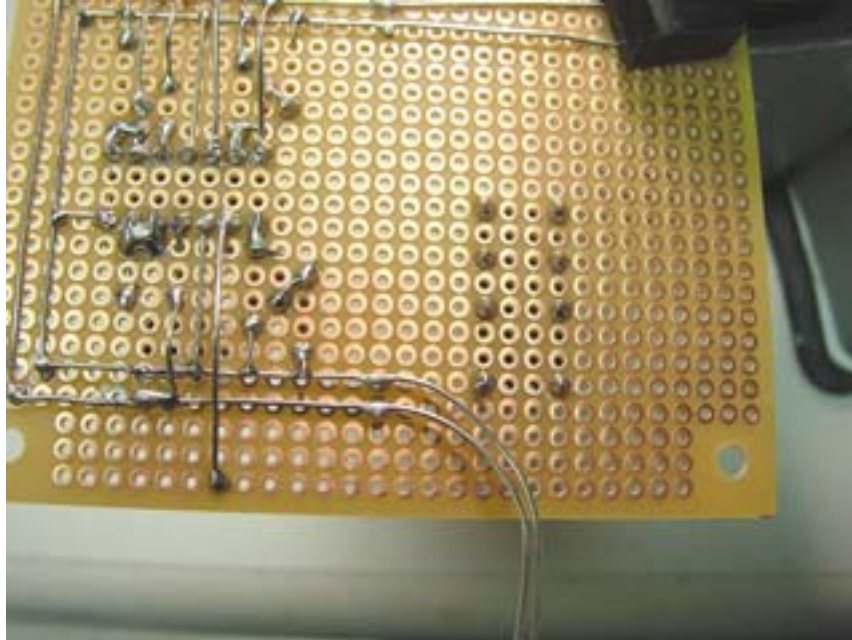


Parts List for MP3 Player Timer Board Project					
Source	Part	P/N	Qty	Cost	Total
All Electronics	Perf board	PC-3	1	1.50	1.50
	Enclosure	TB-3	1	2.50	2.50
	556 timer IC	LM556	1	0.45	0.45
	1MFD tantalum cap	DT-25	1	0.33	0.33
	0.1 uF disc cap	104D50	4	0.10	0.40
	220 uF/35V radial cap	220/35VR	1	0.25	0.25
	1.5 Mohm 1/4 watt resistor	1.5M-1/4	1	0.05	0.05
	100 Kohm 1/4 resistor	100K-1/4	5	0.05	0.25
	Rectifier diode	1N4001	2	0.07	0.14
	Switching diode	1N4148	2	0.07	0.14
	14-pin IC socket	HRICS-14	1	0.50	0.50
	AAA battery holder	BH-41	1	0.75	0.75
	1 MEG potentiometer	AP-1M	1	0.50	0.50
	9VDC SPST relay	RLY-409	1	0.75	0.75
	6VDC DPDT relay	RLY-468	1	1.00	1.00
	1/8" mono phone plug	PMP	2	0.40	0.80
Fry's Electronics	9 volt battery holder	BH-910	1	0.79	0.79
Radio Shack	1/8" mono phone jack	274-251	2	2.00	4.00
Total cost:					15.10

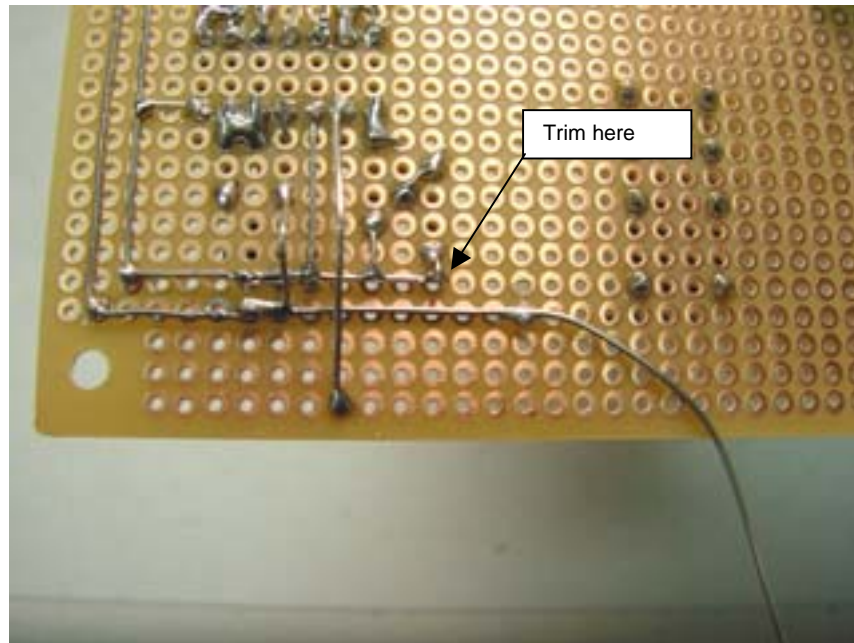


## MP3 Player Timer Board Assembly – Part 2

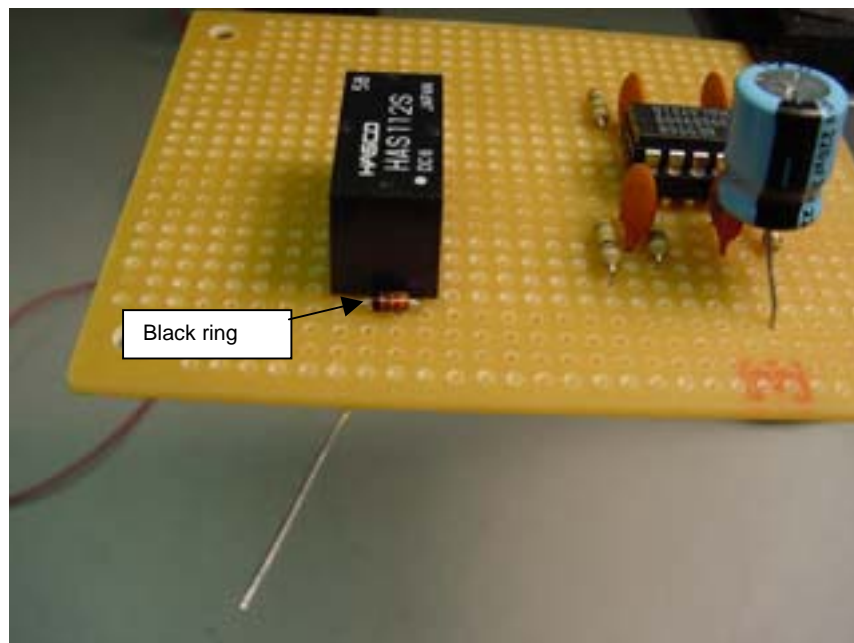
1. Now to add the relays. Locate and solder in the 6VDC DPDT relay as shown. The coil pins are the two that are nearest the bottom of the pic.



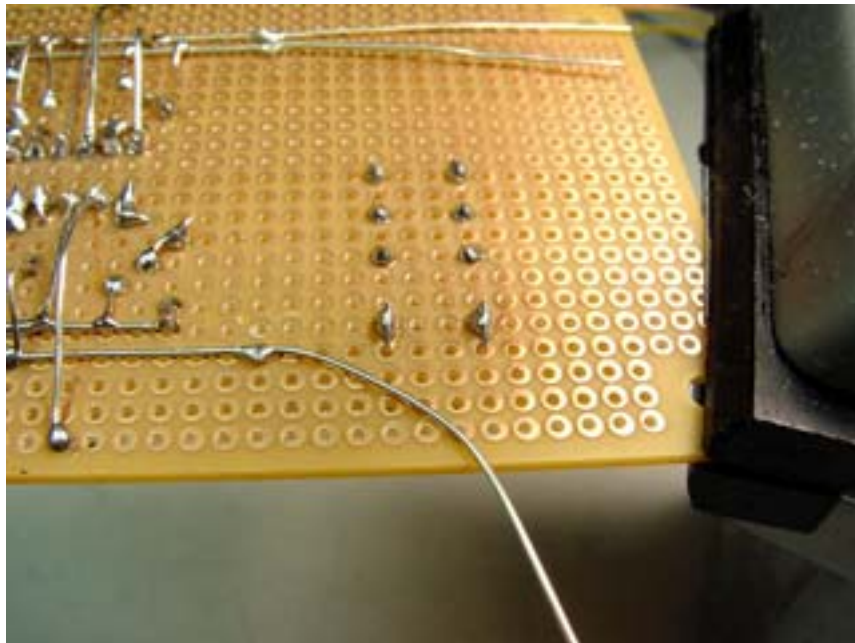
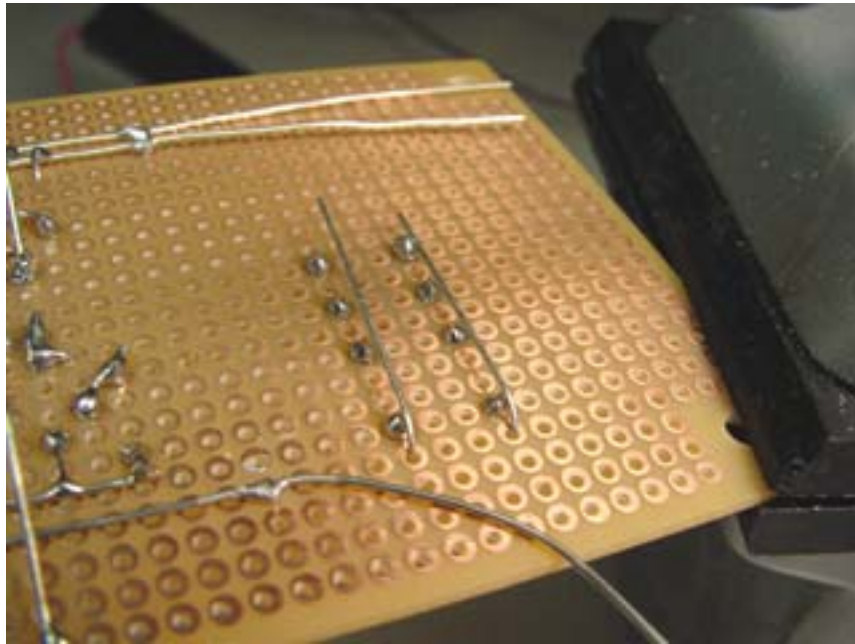
2. Trim the excess positive bus wire as shown.



3. Insert the 1N4148 (small) diode as shown. Make sure the black ring on the diode is facing the correct way or the circuit won't work.

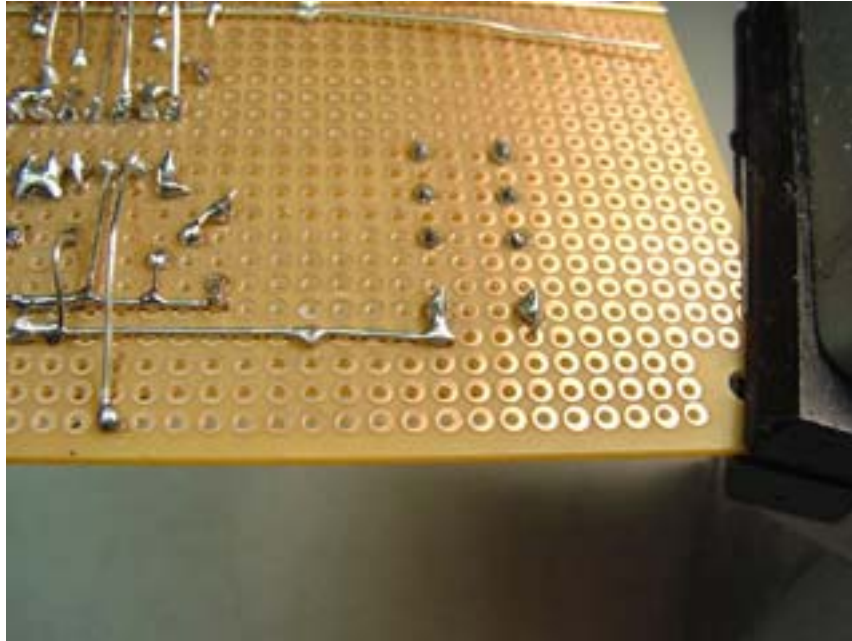


4. Bend the diode legs as shown and solder them to the coil pins of the relay. Trim off the extra wire.

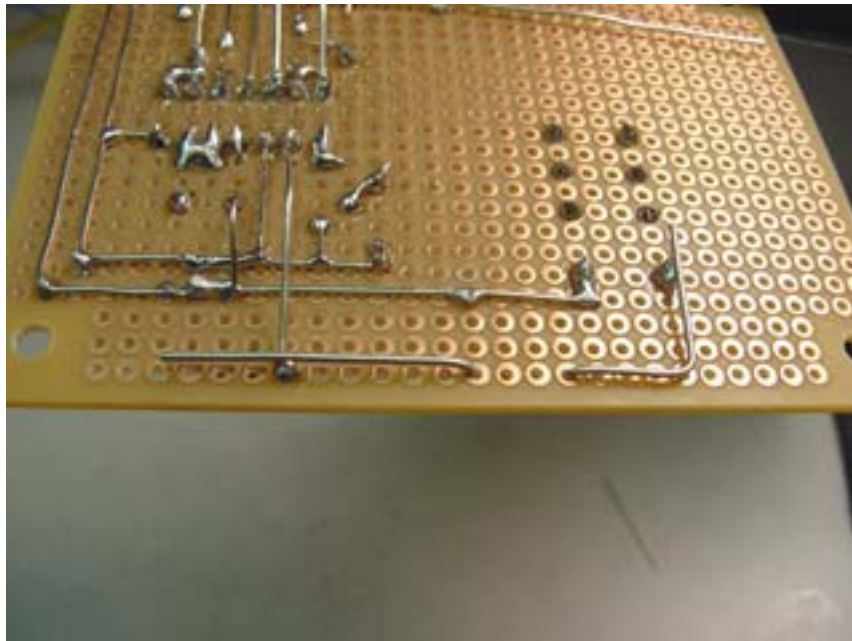


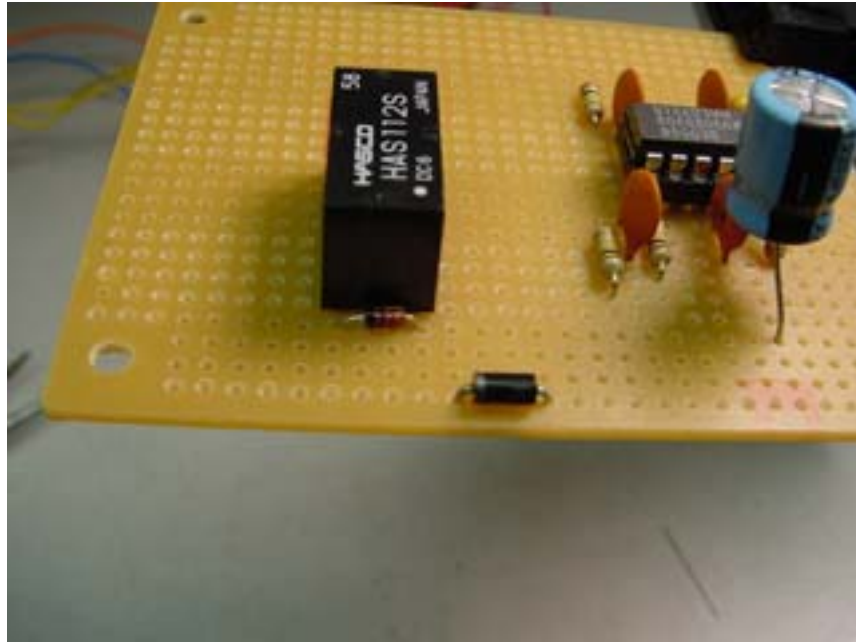


5. Bend the negative bus wire to the coil pin as shown. Solder the wire to the pin and trim.

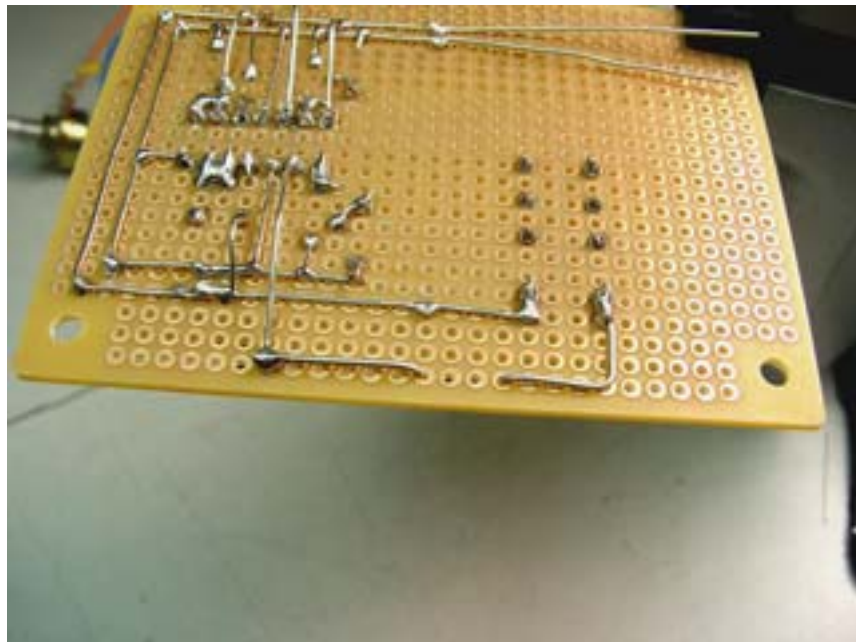


6. Install the 1N4001 (larger) diode and bend the legs as shown. Again, make sure the ring on the diode is facing the correct way (same direction as the small diode).

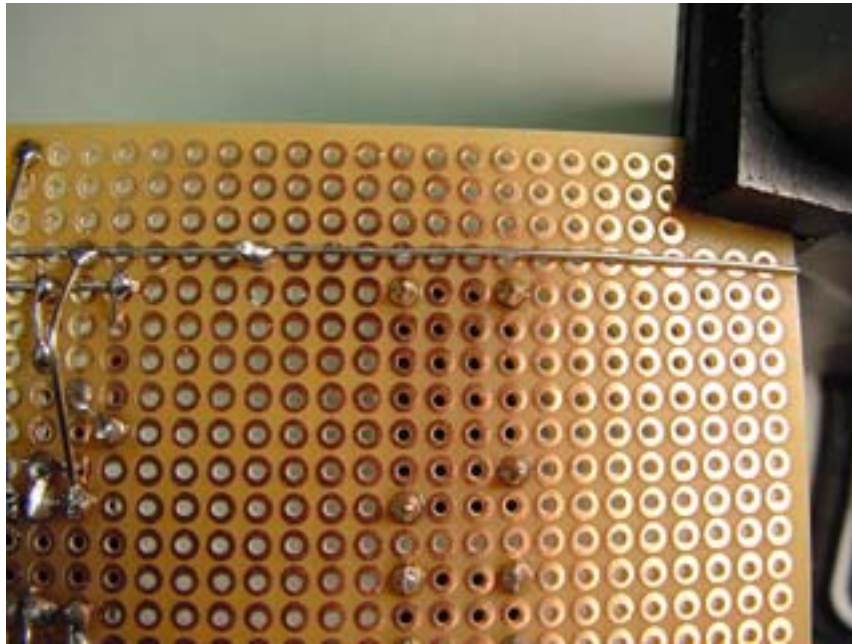




7. Solder the diode wires as shown and trim the excess wire.

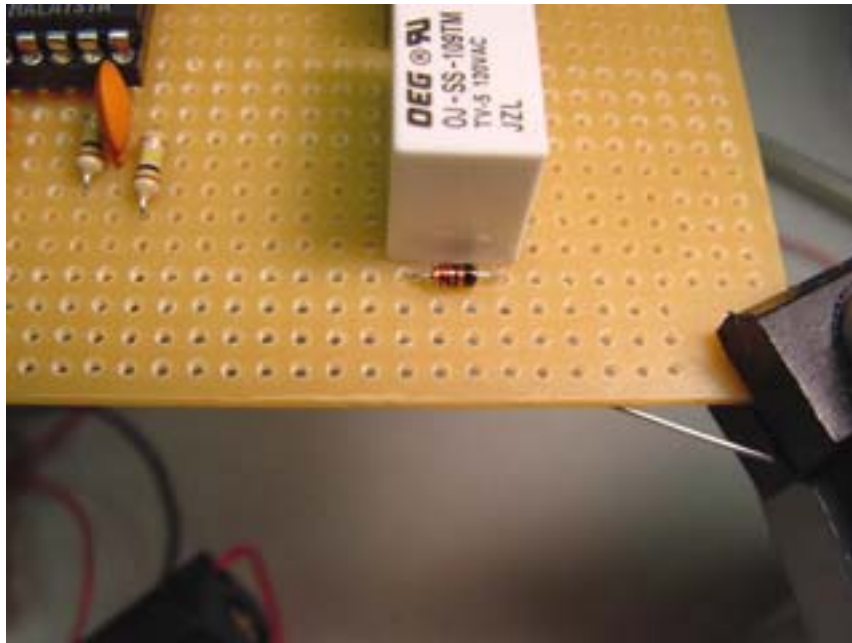
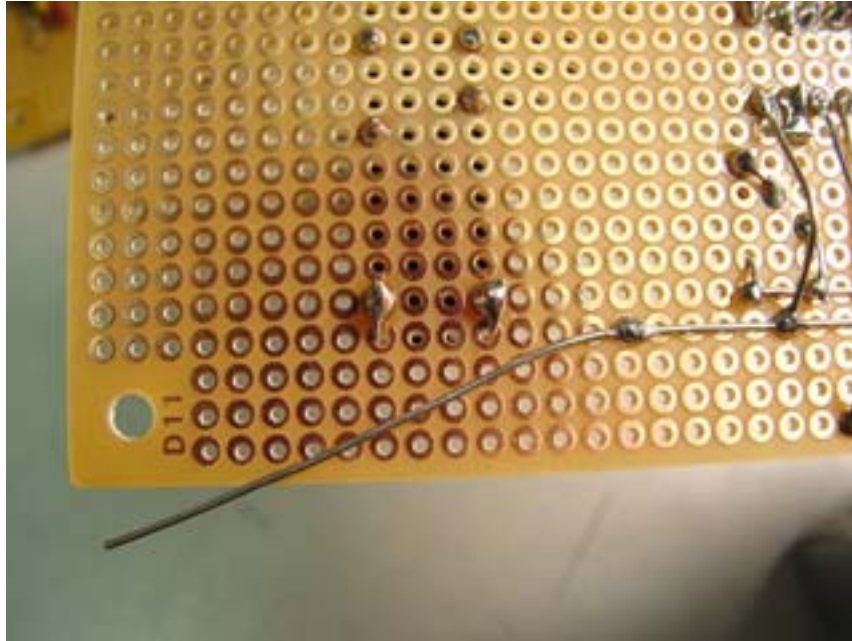


8. Now let's install the 9VDC relay. Trim the positive bus wire as shown and solder in the relay. The coil pins are the two nearest the top of the pic.

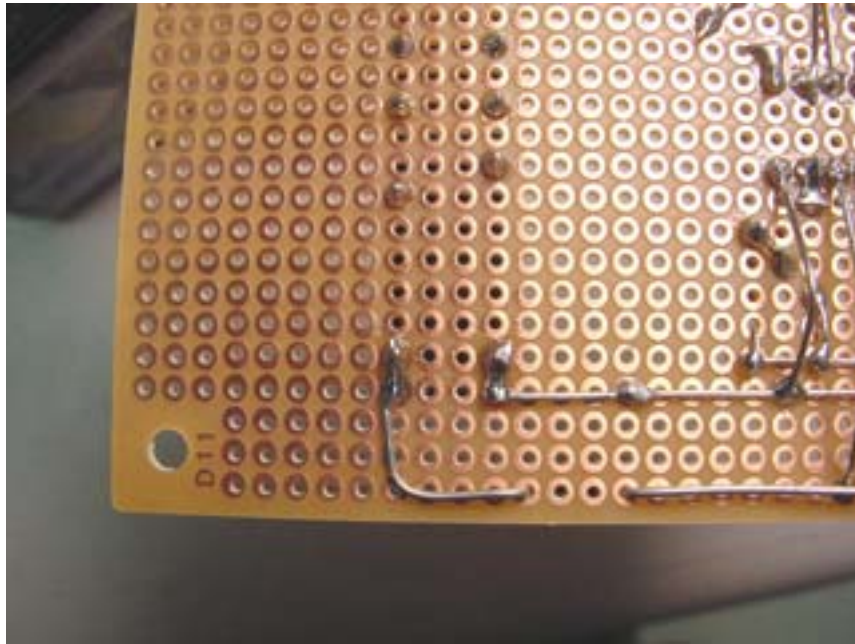




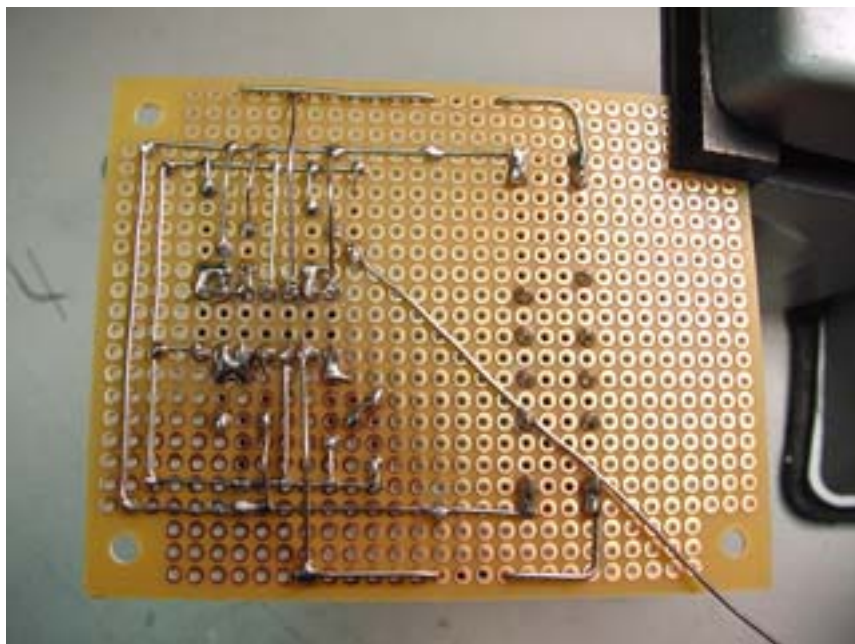
9. Insert and solder in the 1N4148 diode. Verify the direction of the ring.



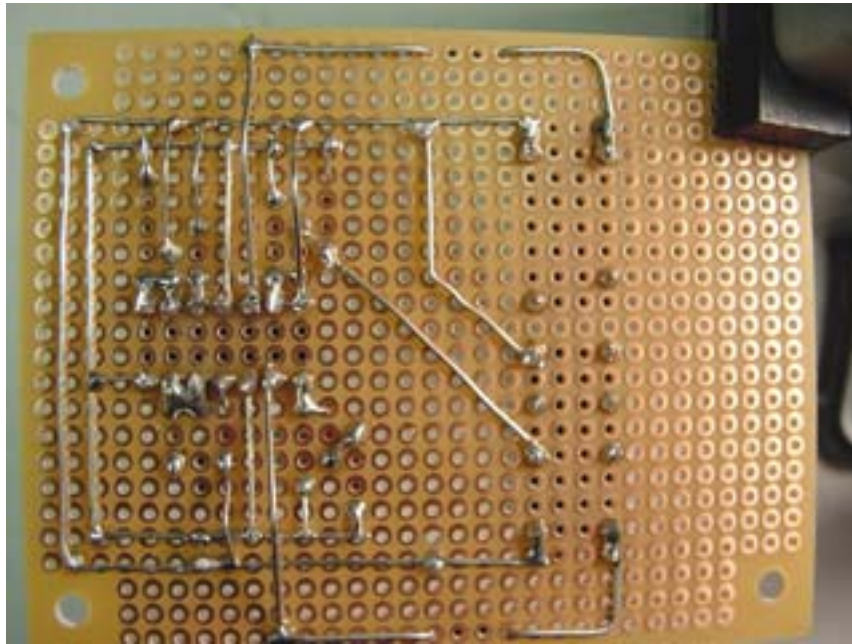
10. Install the large diode as before. I know I'm repeating myself, but check the ring direction before you solder.



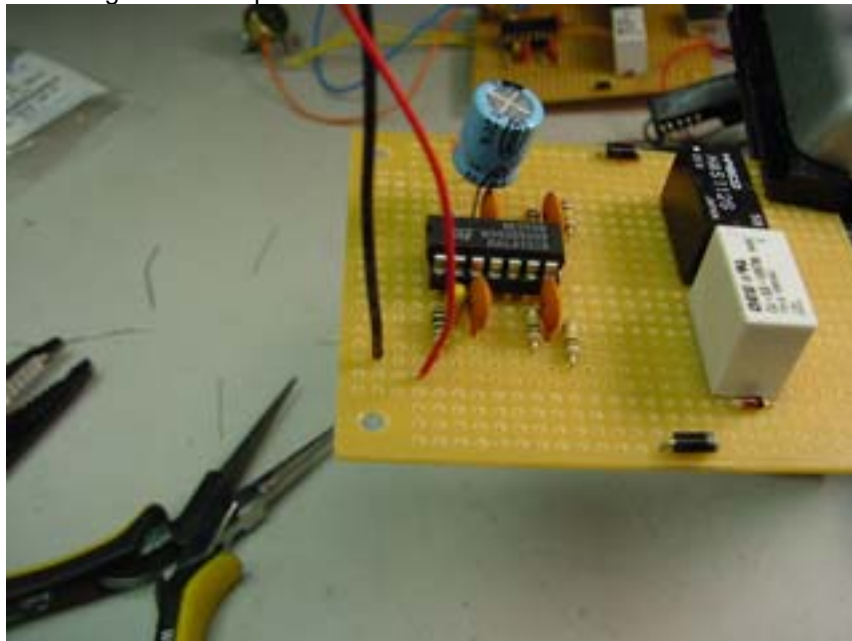
11. Solder a piece of bus wire from the relay contact to the trigger location as shown. Trim off the extra wire.



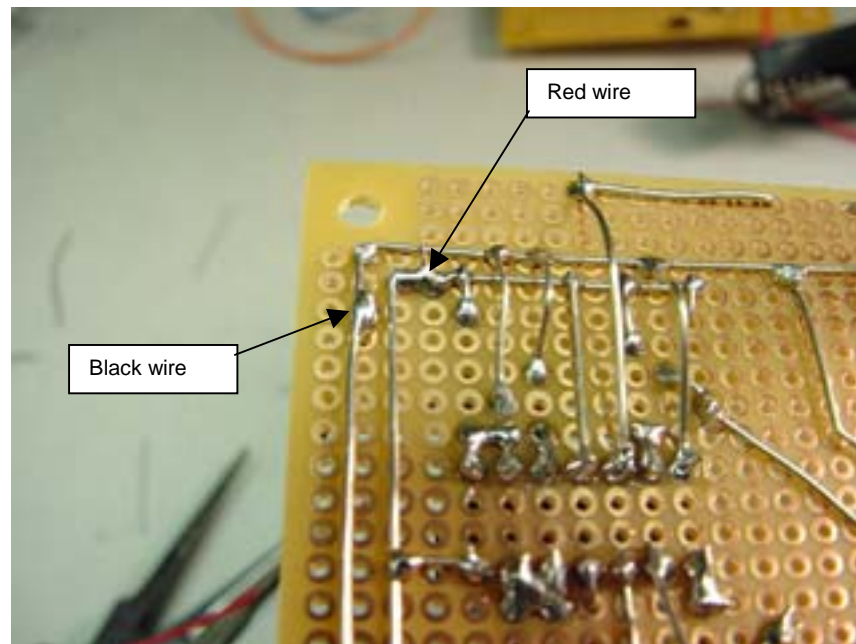
12. Solder a second piece of bus wire from the relay pin to the negative bus wire as shown. These are the wires that will trigger the "button press" timer circuit.



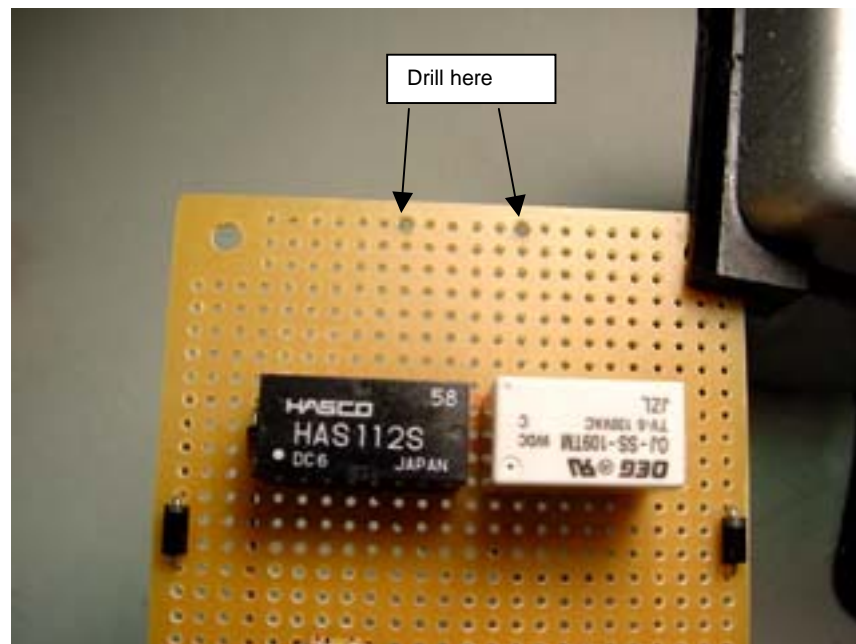
13. If you want to test the circuit, go ahead and solder in the power leads. Red is positive and black negative in the pic.



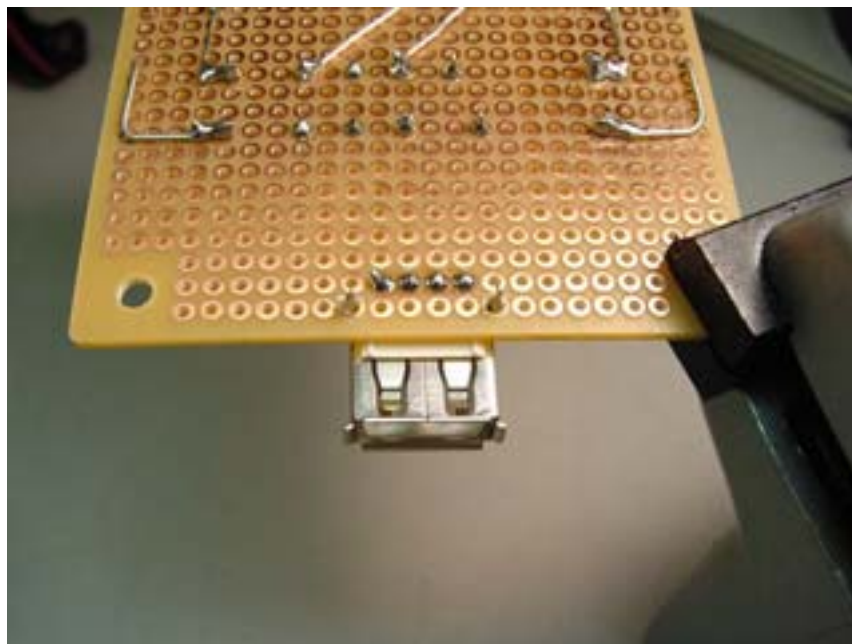
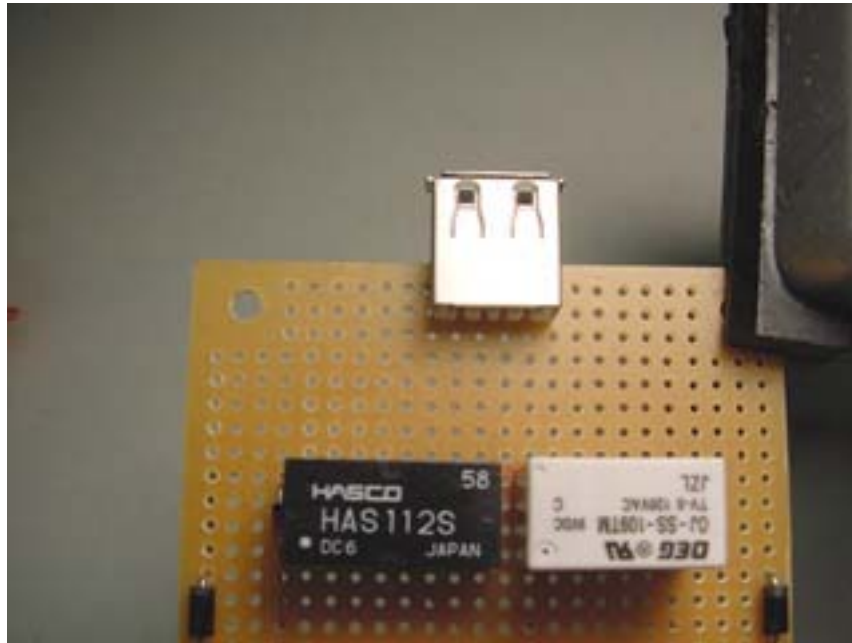




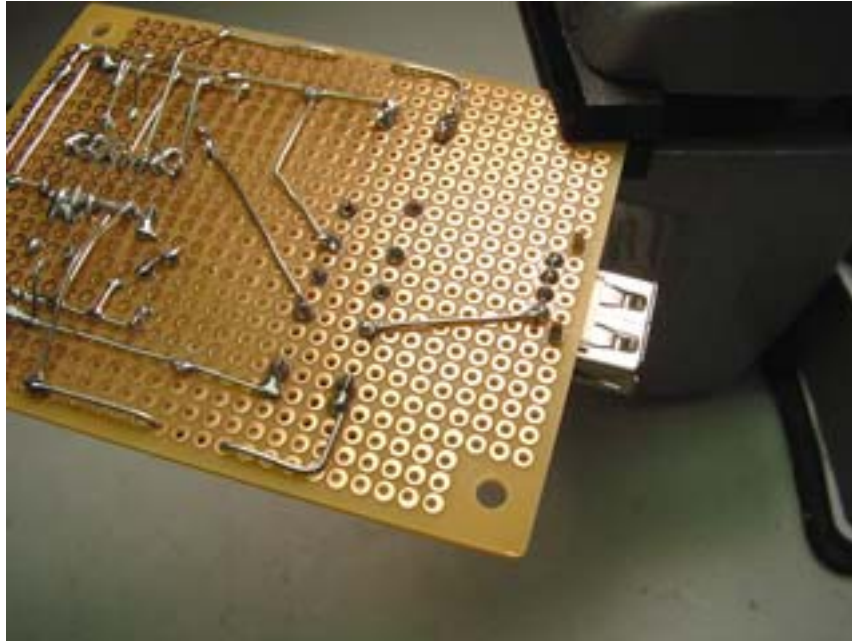
14. Ream or drill out these two holes on the edge of the board. This is where the USB connector will be installed. The holes need to be large enough to fit the clips on the connector.



15. Press in the USB connector and solder all four pins to the board.



16. Solder a piece of bus wire as shown.

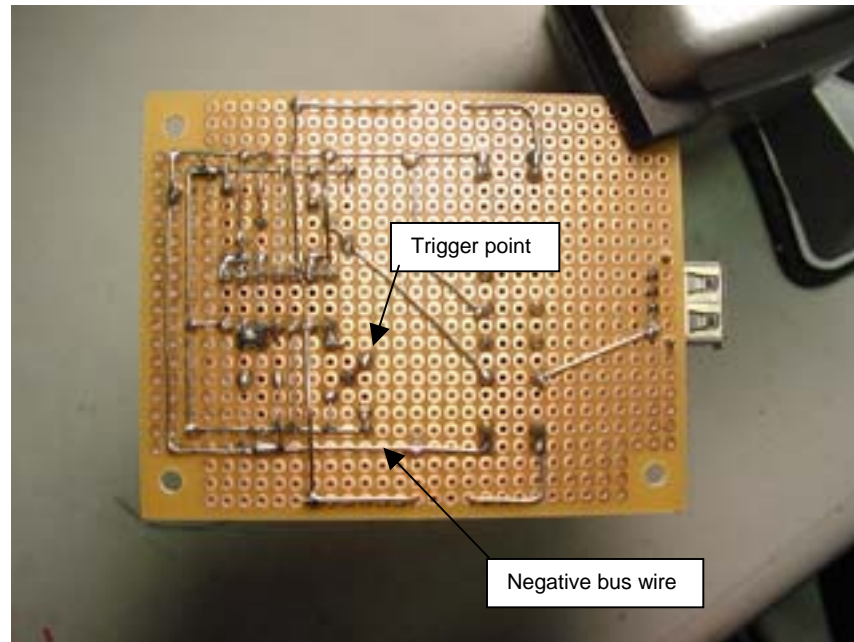


17. Here's what you should have at this point.





18. If you want to test the circuit, attach a 9-volt battery to the power leads. Caution: make sure you have the polarity correct. If you don't, you'll blow a crater in the 556 chip. To test the timer, momentarily connect the trigger point to the negative bus wire as shown in the pic. You should hear a click as both relays energize, then another click a moment later as the first timer runs out. Since we don't yet have the potentiometer attached, the other relay won't release until you disconnect the power.

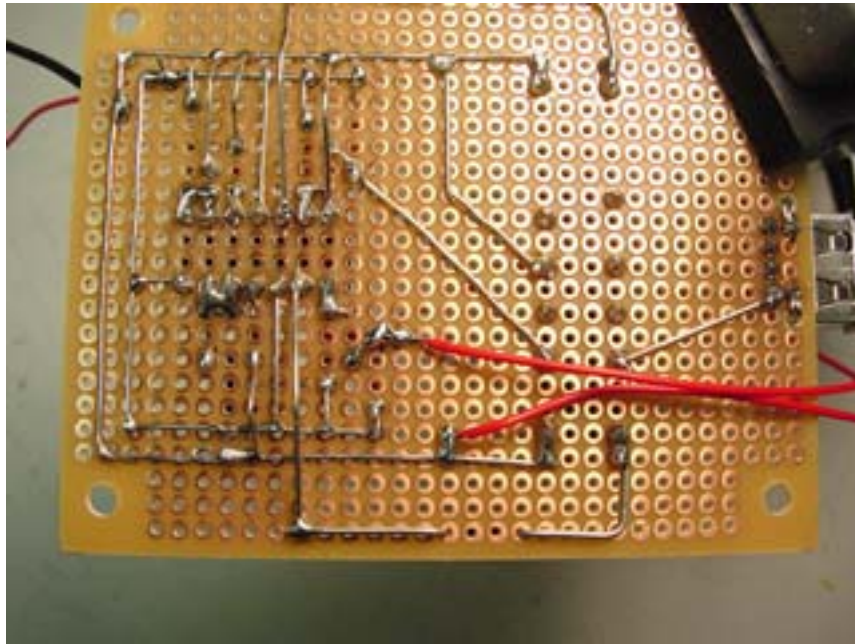


These are all of the components that are soldered to the board. Part 3 of the how-to will detail the battery holders, trigger, potentiometer wiring and installing the board in the plastic enclosure. As always, email me if you have any questions. (<mailto:adamsgd@aol.com>)

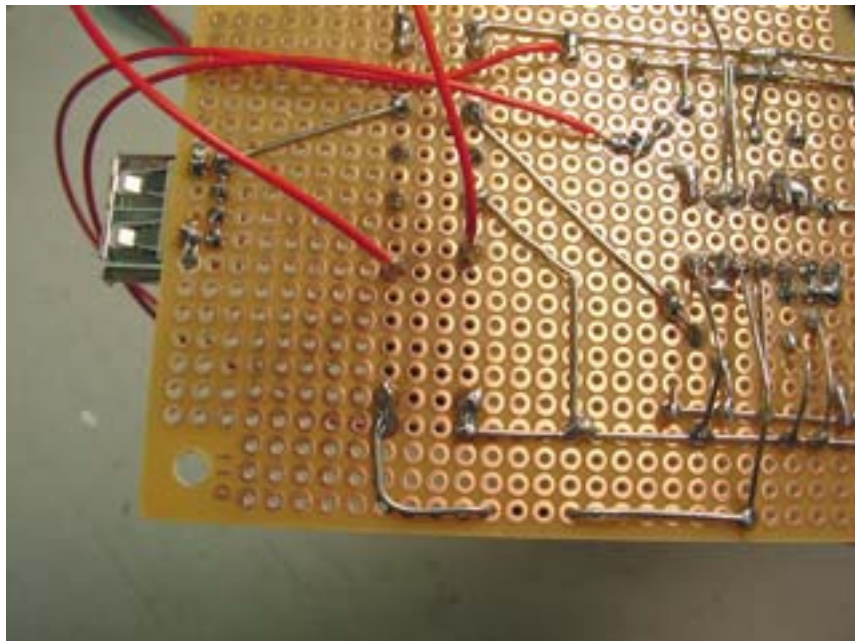
### MP3 Player Timer Board Assembly – Part 3

As always, read this entire instruction before starting.

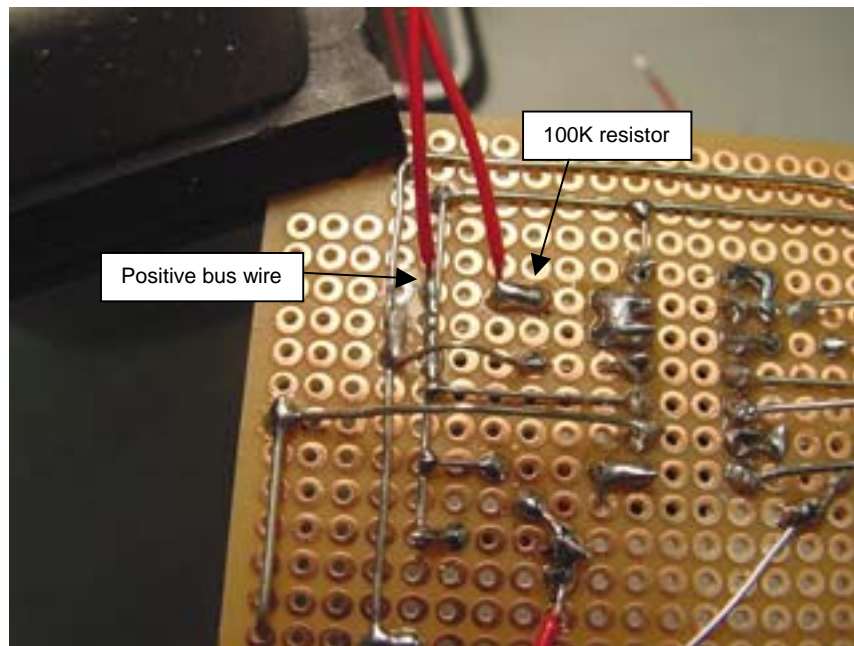
1. Now for the easy stuff. Locate the trigger point as shown, and solder a wire in the hole next to it. Make a solder bridge to the wire. Solder another wire to a point on the negative bus wire. When these two wires are shorted, the timers will activate. Make the wires about 10" long – you can trim them later if needed.



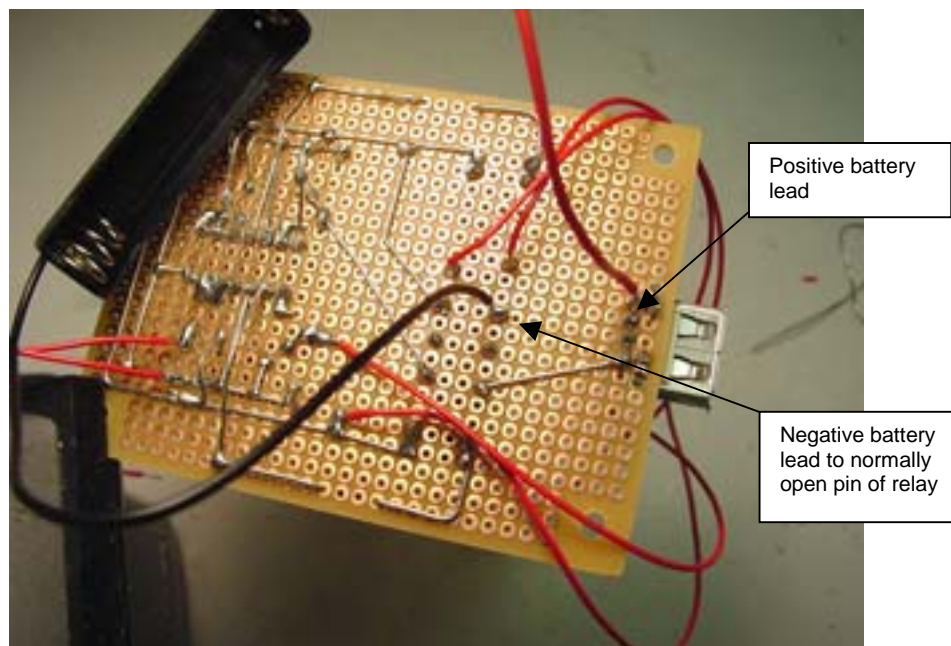
2. Solder two wires to the SPST relay as shown. These wires will connect to the MP3 player switch wires. Make them about 6"-8".



3. Solder two 6" wires as shown. These will connect to the 1Mohm potentiometer. The 100K resistor (pin 13) is the one that's next to the large 220 uF cap.

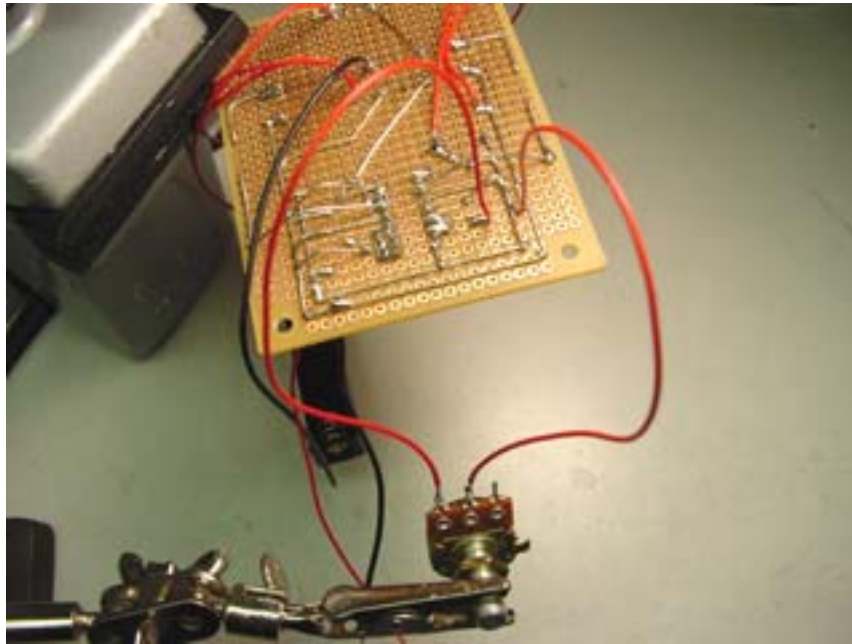


4. Solder the AAA battery holder to the remaining normally open pin on the DPDT relay and the pin shown on the USB connector. Note: If you plan to place this circuit in a project box, you may want to wait until the box is ready and the wire holes are drilled before making this connection.





5. Solder the wires from the 100K resistor and the positive bus wire to the potentiometer. One wire must go to the center pin.



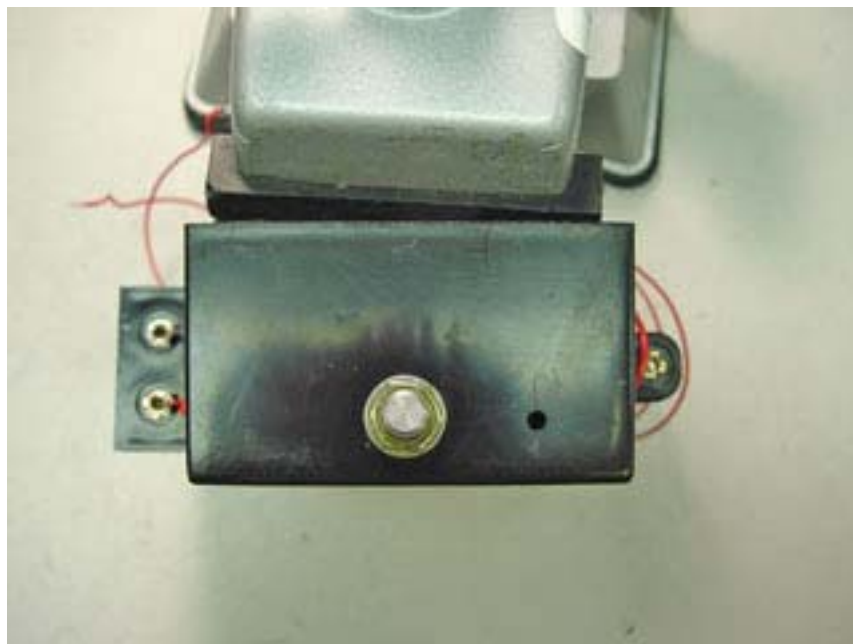
Note: At this time I recommend testing the board. Attach a 9 volt source to the power leads. **Make sure you have the polarity correct or you'll kill the 556 chip.** Insert a AAA battery and plug in the player. Connect the player switch wires as shown in Step 11. Touch the two trigger wires together while watching the player. The red light should come on and then start blinking. If it doesn't, press and hold the Play button on the player. If the player is working right, the light will come on and blink when you release the button. I also recommend testing ALL of the MP3 players you have with all the boards you build. There may be some variation in the time required to put them in Play mode.

If the player is working but doesn't light up when triggered by the timer, you'll need to increase the relay "on" time a bit. Email me at [adamsgd@aol.com](mailto:adamsgd@aol.com) and we'll discuss what to do. Don't worry – it's easy.

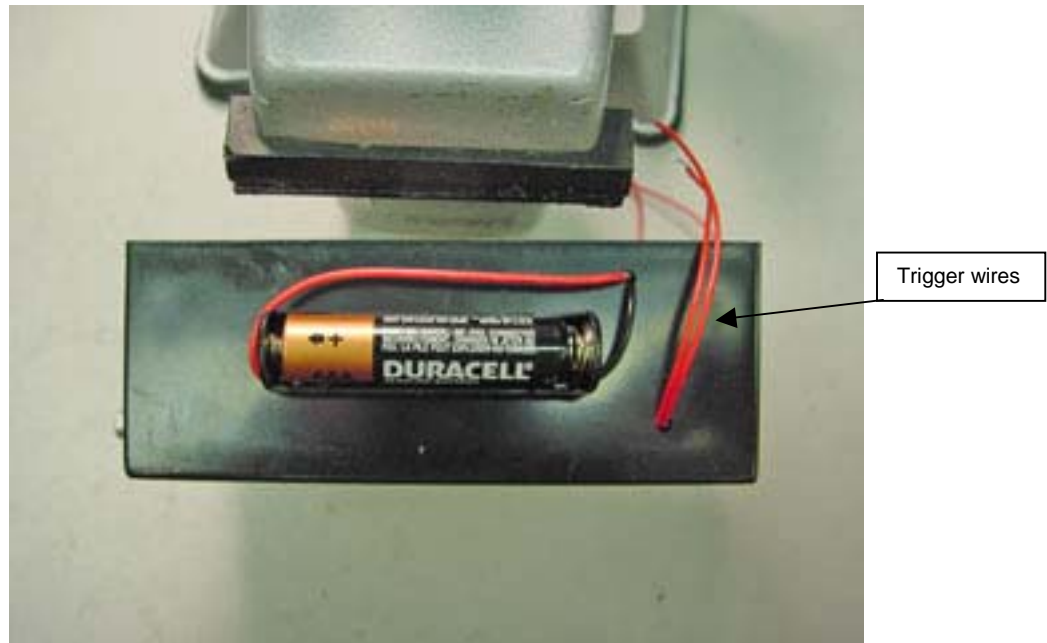
6. That's all the wiring. Here are some pix of how I installed the board into a TB-3 project box from All Electronics. The box is matched to fit the PC-3 perf board. Drill holes in the appropriate places to run the wires out. Do the drilling before you place the board in the box. I used foam tape to attach the 9 volt battery holder to the box.



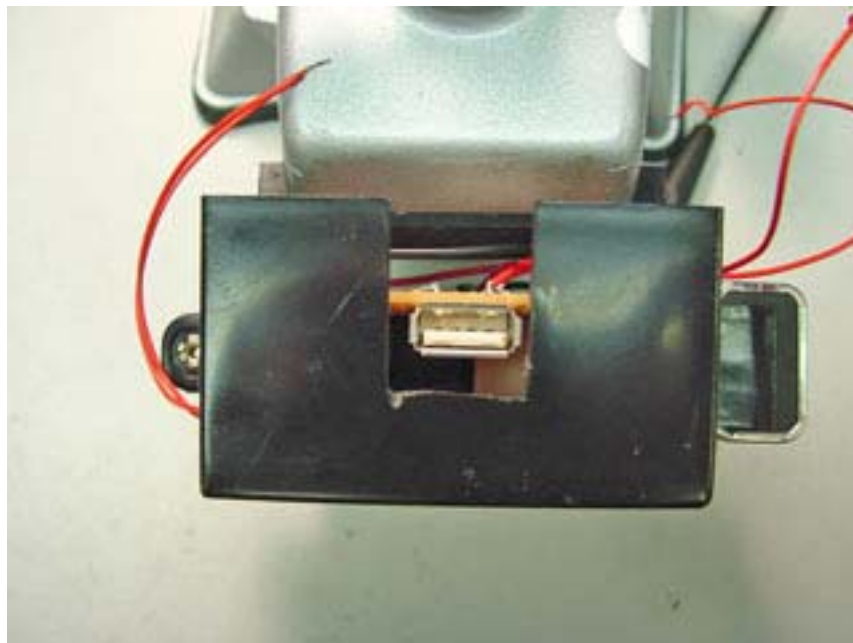
7. Drill a hole that fits the shaft of the potentiometer. Make sure you leave enough clearance for the pot to fit in the box. Attach the nut and tighten.



8. Again, I used foam tape to attach the AAA battery holder to the box. Solder the battery leads as shown in Step 4.



9. I hacked a slot in the box opposite the potentiometer. Again, do this before you install the board.

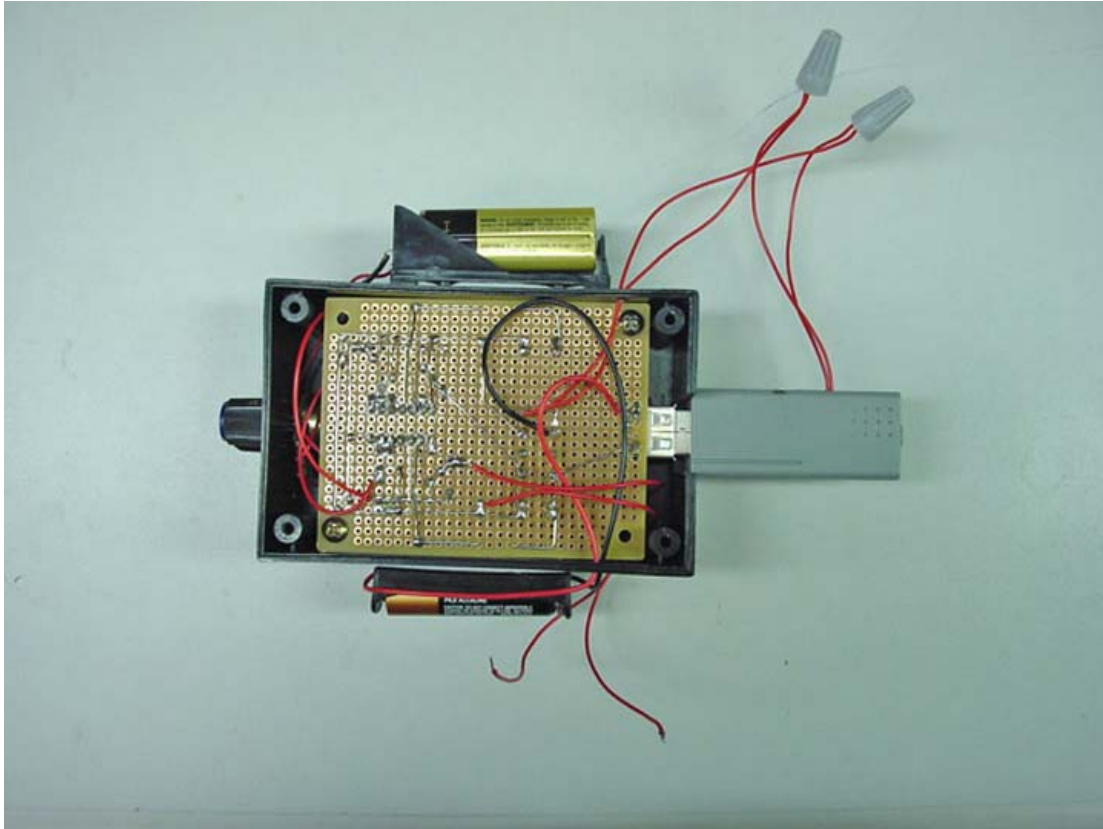




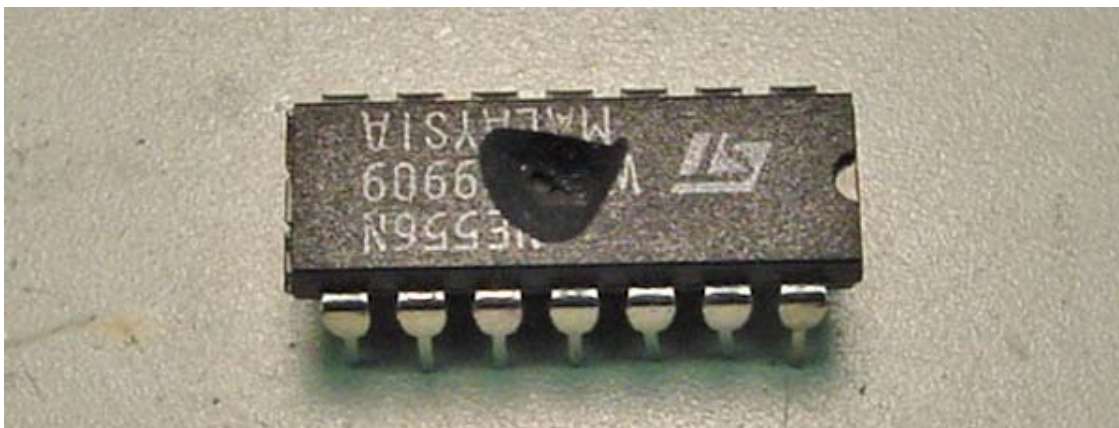
10. Here's where I soldered the player trigger wires. Make sure you don't get any solder on the other components or terminals. File a notch in the cover to let the wires out.



11. Here's the finished product. I found a knob that fit the pot lying around on my bench. It's helpful to have an indicator when dialing the time settings. Plug in the player and batteries, connect the wires as shown, and see what happens when you trigger the circuit.



**Caution: When installing the 9 volt battery, do not reverse the polarity, not even for an instant. This circuit is not fused, and reverse polarity will blow a crater (literally) in the 556 timer IC. I know I'm repeating myself, but the chip will explode. See for yourself:**



What you should see is that the red indicator on the player will light, and then start blinking.

This means the player is in "Play" mode. It will stay on for ~24 secs, then the power will be cut and the light will go off. If the light hasn't gone out after 30 secs, turn the pot shaft all the way in the opposite direction and wait about 30 secs. The light should go off now. If it doesn't, or you are getting other odd behavior, drop me a note at [adamsgd@aol.com](mailto:adamsgd@aol.com). Include pictures of the board and the way you wired up the batteries etc. If all is well, congratulations! Have fun with your new toy!

Note: Some players may not trigger into the "Play" mode before the 1.5 sec timer runs out. There is some variation among the players as well as the components in the circuit. If this happens, let me know and I'll show you how to increase the time so the player will start.

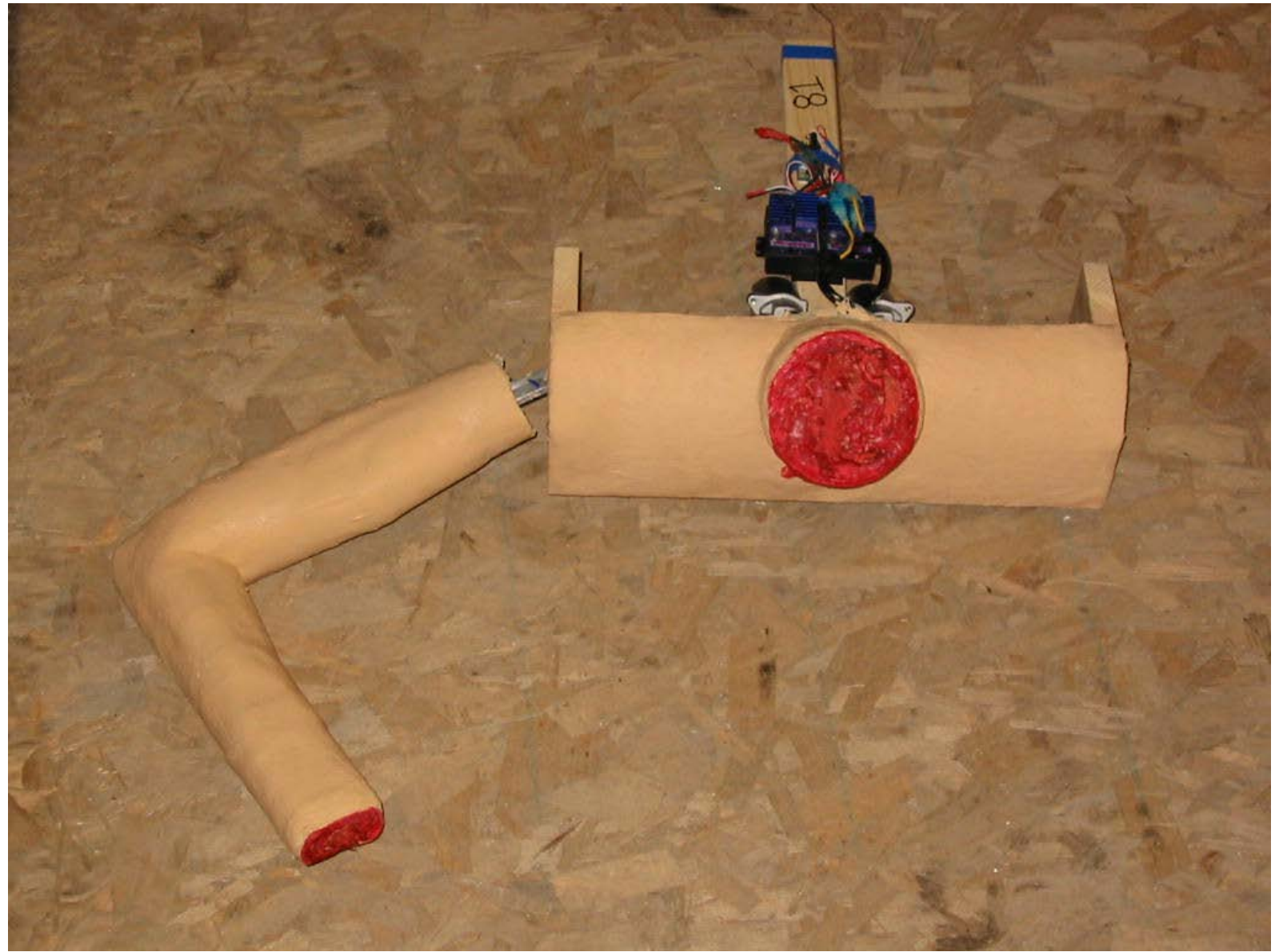
The time limits for the "on" time are set by the resistor/capacitor values at pins 12 and 13. The 220 uF cap gives you a minimum on time of ~24 secs and a max of ~4:30. Changing the value of the cap will change these times. I did a test with a 470 uF cap at pin 12 and couldn't get the timer to reset – it kept re-triggering itself. If 4:30 is too short a time for your needs you may be able to use a 330 uF cap, but the timer may re-trigger. Having a minimum time of ~24 secs means that you'll need to edit the sound file(s) if they're shorter than that, or the player will loop. Just add silence to the end of the file to increase the length to greater than the minimum play time and you're good to go.

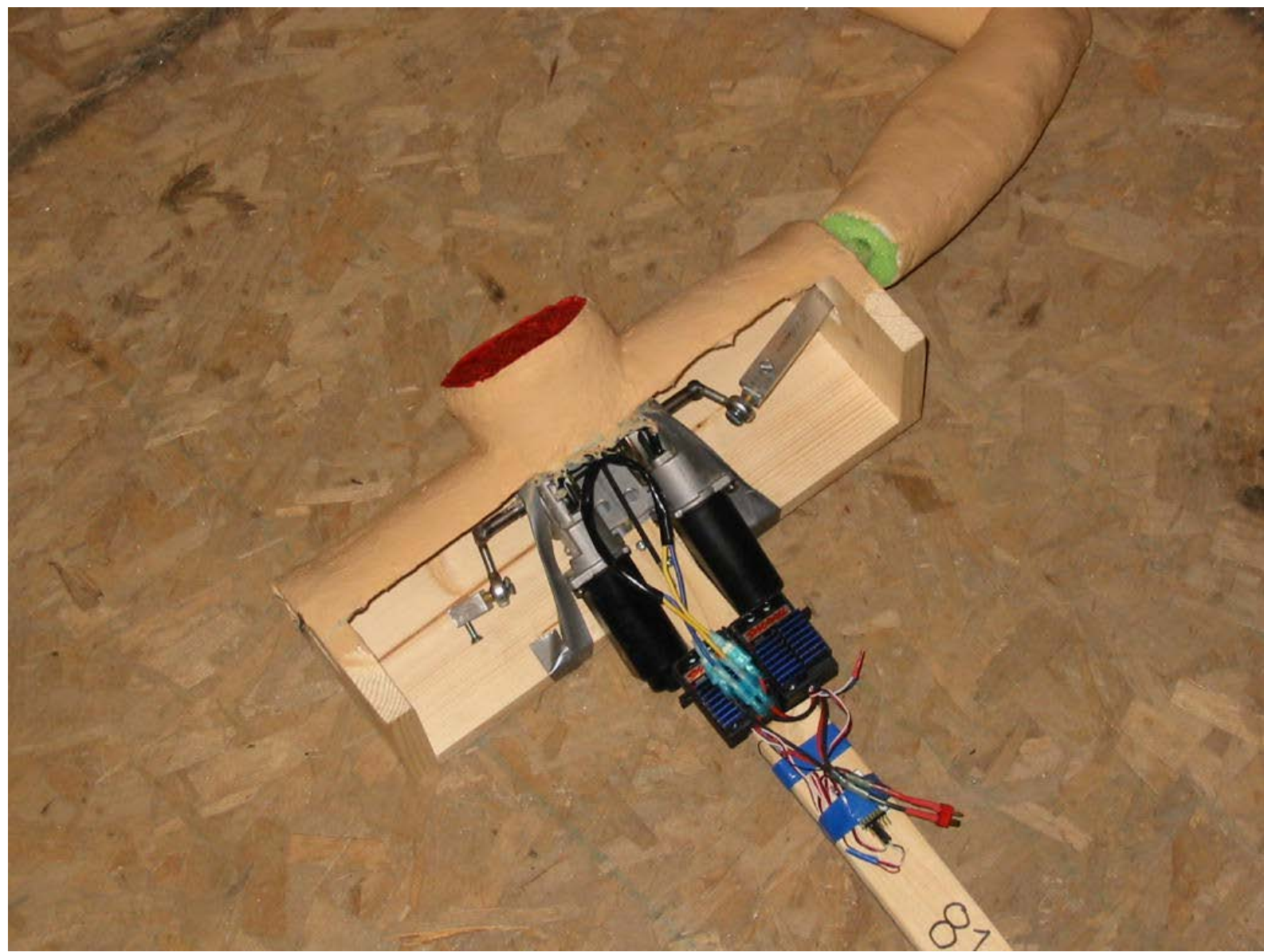
#### Troubleshooting:

Since I don't know how skilled you are in circuit assembly and soldering, it's hard to cover all the things that might go wrong. If the circuit doesn't work, here are a few things to check:

1. Bad solder joints – check all of the solder joints on the board, preferably under magnification. Look for solder bridges and traces in places where they don't belong. "Cold" joints will appear dull in color (not shiny). Reflow any suspect joints.
2. Capacitors installed backwards – there are only two caps that require correct polarity, the one on pin 2 and the large one on pin 12. Check both of them against the pics in the how-to and make sure they're correct. If they're reversed, they may eventually explode. That's not good, not even a little bit good.
3. Last but not least – double-check all the components to make sure they're in the right place, that all wiring is as shown in the how-to, and that the IC is in the socket correctly (the dot on the IC should be at pin 1).



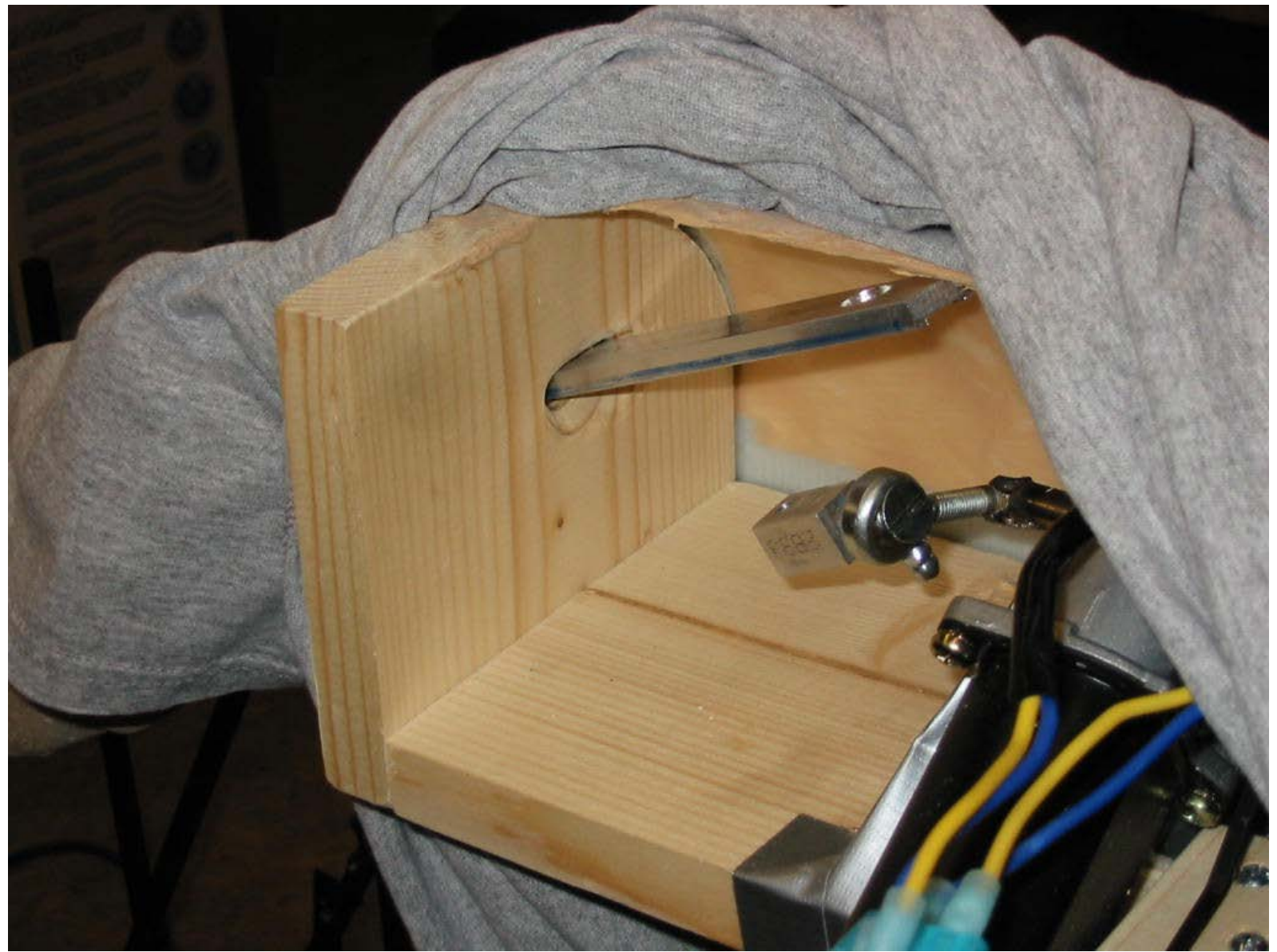


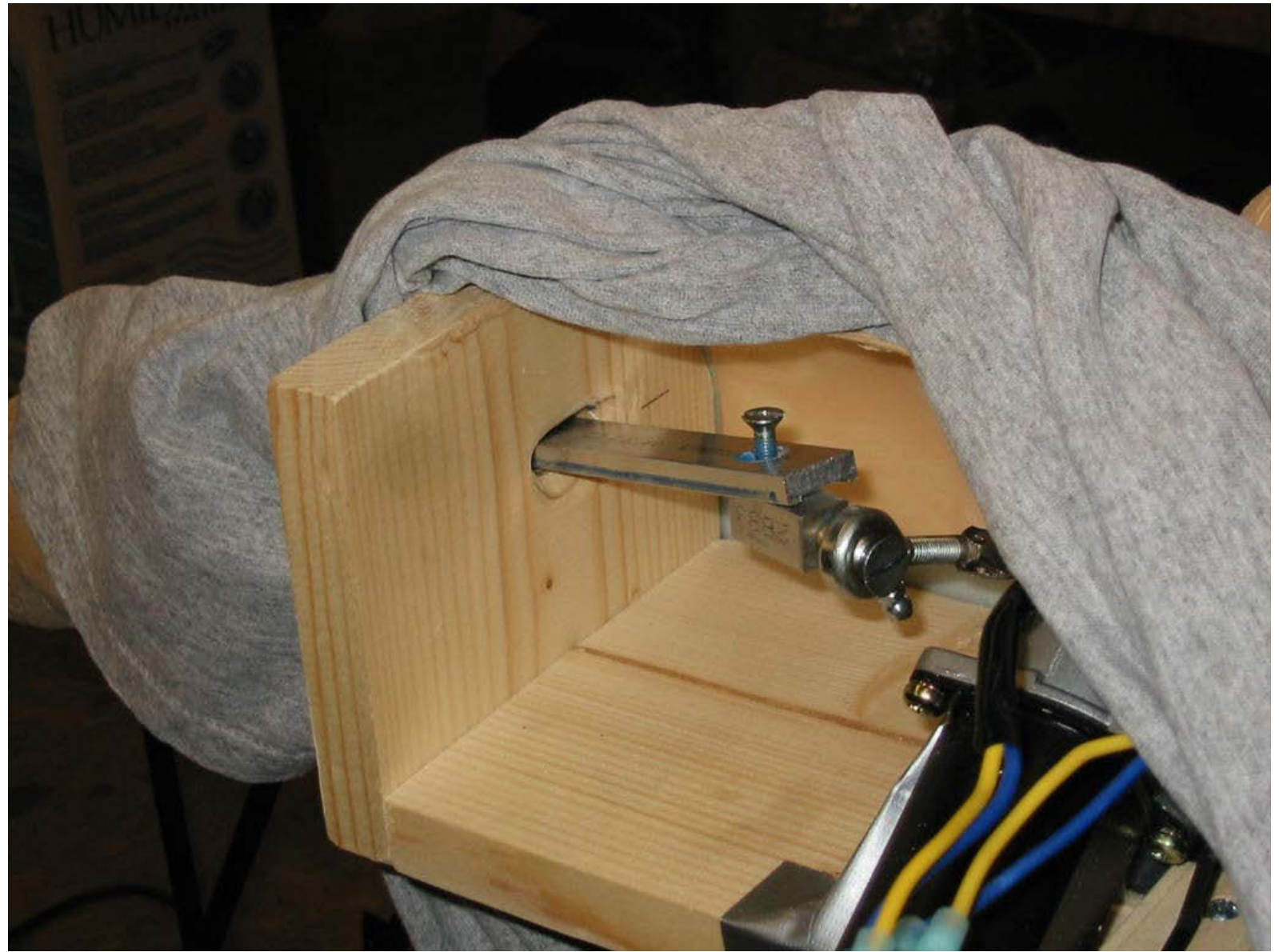


















# Bourn Again Creation's Halloween Page

## *Radio Controlled Crawling Zombie Video Page*



[If the Video doesn't load you can  
click here to download it \(2.3 meg\)](#)

[Same video as above, but  
higher resolution \(27 megs\)](#)

# Bourn Again Creation's Halloween Page

## RC Crawlers Around the World

A foreword first, credit for mine came from seeing [Dave in the Grave's version](#).

While not radio controlled and using a single slower motor, his crawling skeleton design spurred the idea to make a controllable RC crawler version.

Starting off with mine (Bourno). This and sequential RC crawlers are the Mk2 version as I would call them from trials of different motors and speed controllers. Debuted in the summer of 2007 at IronStock.



The [basic crawler](#) mechanism was provided by me, but each hunter did their own flair to make each one their own. I believe I have all the hunters listed below in chronological order, but am short some pics for them all.

Next came Peanuts as I drug out the project for about a year and took the Mk1 version to his BBQ earlier to make them drool. I figured he deserved one of his very own from all the enjoyment I got from



Jim Wieme bought a crawler mechanism when I showed it off at IronStock 2007.

WormyT became the next proud and excited owner of an RC crawler at her "Make and Take" that she didn't know about when I stopped by her place during a work trip.



DeadSpider became the next hunter and only Canadian so far ;- ) to own one. We met in Seattle at Krough's place when I was out in Moses Lake, WA on a different work trip and drove over to spend a late morning and part afternoon building the crawler and ripping out the hairs of my hands with some flex wax



Now, for the explosion of crawlers. Many of which I haven't tracked down pictures for or possibly mis-placed.

This so-called 'explosion' was due to having a Make and Take session at IronStock 2008 with 8 hunters overall getting one.

Participants were:

Mazz (didn't make it, but wanted one anyway), Adam\_I, Pat (revenant), Toby (haunt31), Mr. Bill of Mr. Bill's Thrills and Hayride, Tony (Haunted Campers), Gary (king\_of\_halloween), and a somewhat nearby haunt group in red shirts bought the demo one (forgot their haunt name)

Adam\_I





## Haunt31



## Revenant



Believe there may be a couple more crawlers out there that I didn't supply the mechanism directly to, but built their own from the web pages.

# Bourn Again Creation's Halloween Page

## RC Crawler How-To

### Parts list:

For either Mk II or Mk III version

Transmitter - search on ebay for Vex transmitter, All Electronics is sold out

Receiver - I used a GWS 75mhz receiver on channel 89

Motors - SurplusCenter.com items 5-1581-L and R

2 ESCs - Traxxas XL-1, these seemed the most quiet for the price

Battery - 7.2 volt RC car type

Battery Y splitter

swivels - McMaster.com item 60645K131

aluminum metal - got mine from onlinemetalsupply.com as the yarde.com dropzone minimum has gotten too high.

For the upper arms I used 5/16" x 1-3/8" last time I ordered. The motor mounts was 1/8"x1-1/4"x1-1/4" square tubing. The swivel to arm adapters were 1/2" square aluminum bar stock. You may need to adjust.

1 x 6 wood

some 8-32 machine screw and nylok nuts

Mk III version additional parts only

forearm swivels - McMaster.com item 60645K431

5/16 - 24 x 2 feet threaded rod 90032A030



1 x 6 wood

One piece at 14-1/2" You could narrow that a little

Two pieces at 4-1/2"

Here the side pieces are slotted for the arm holes  
I used a 3/8" slot for mine at 1-5/8" long



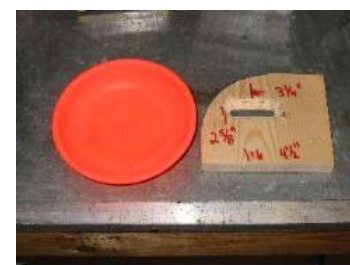
Depending on the width and thickness of the arm material, the slot size may need adjusted



Now to bevel the slot.



Set the depth so about an 1/8" is left un-beveled.



For later on, I made my swivel joint to arm adapters out of 1/2" x 1/2" x 1" aluminum.

For most of my aluminum, I get it at <http://www.onlinemetalsupply.com>  
or else <http://www.yarde.com/cgi-bin/dropzone.pl>

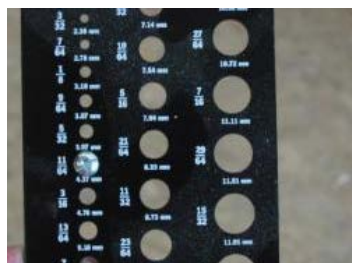


On my early ones, I scribed the center. I later on made a jig piece to it much easier and faster. The ends are tapped for a 5/16" bolt thread and the side for a 1/4" bolt thread (mainly due to using a 1/4" x 1/2" long bolt, couldn't find a shorter 5/16" bolt less than 3/4" and didn't want to cut them down.

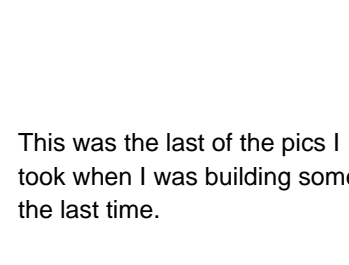




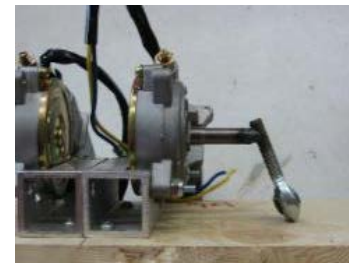
I made special motor mounts out of 1-1/4" x 1/8" square aluminum tubing for the 150 rpm 12 volt motors found at <http://www.surpluscenter.com>



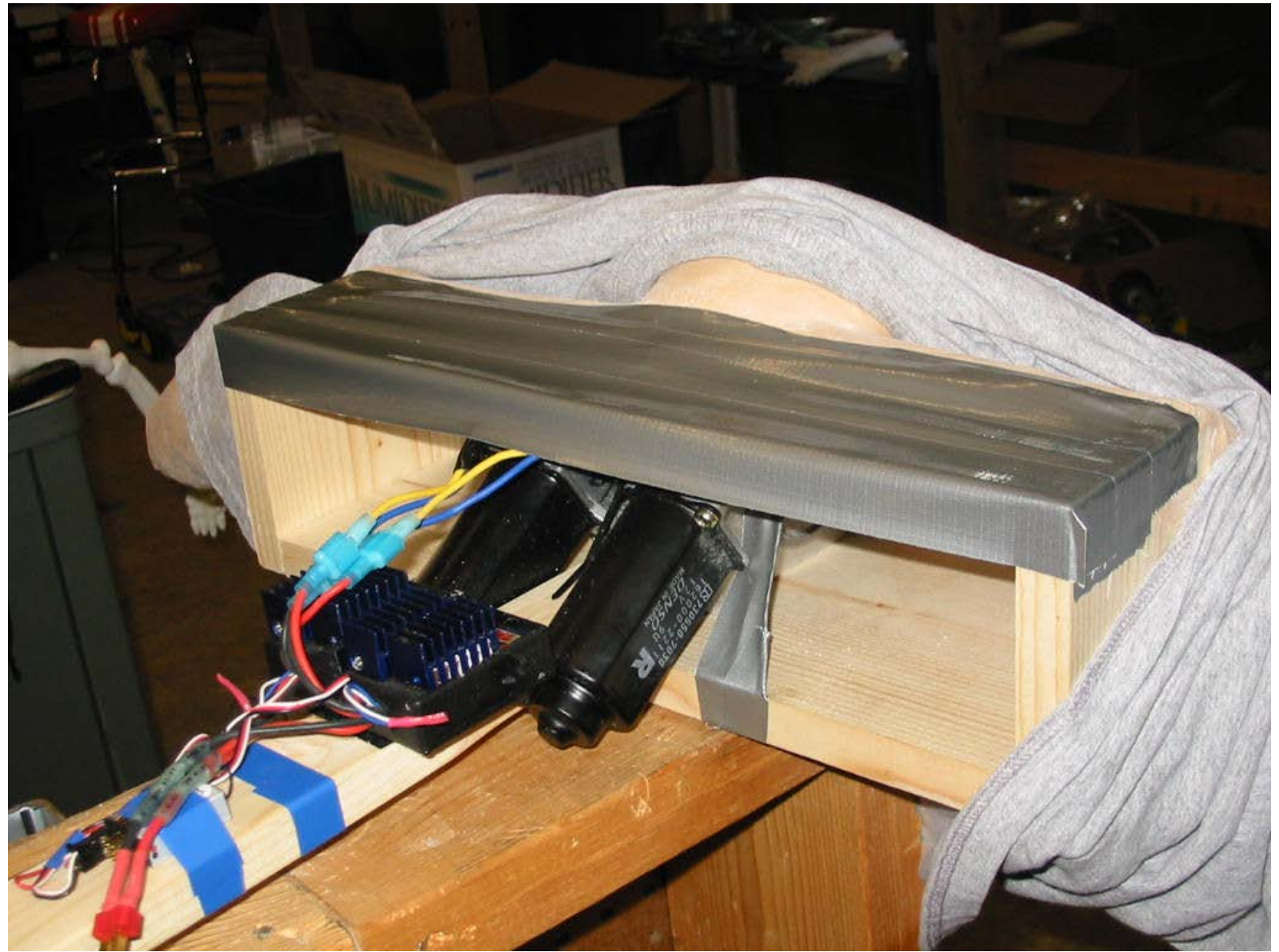
The motors had metric bolts, so I drilled them out bigger to slip 8-32 x 1" machine screws thru



This was the last of the pics I took when I was building some the last time.



Here, the 5/16" swivel joints from <http://www.mcmaster.com> item 6072K63 are welded to the motor shafts.























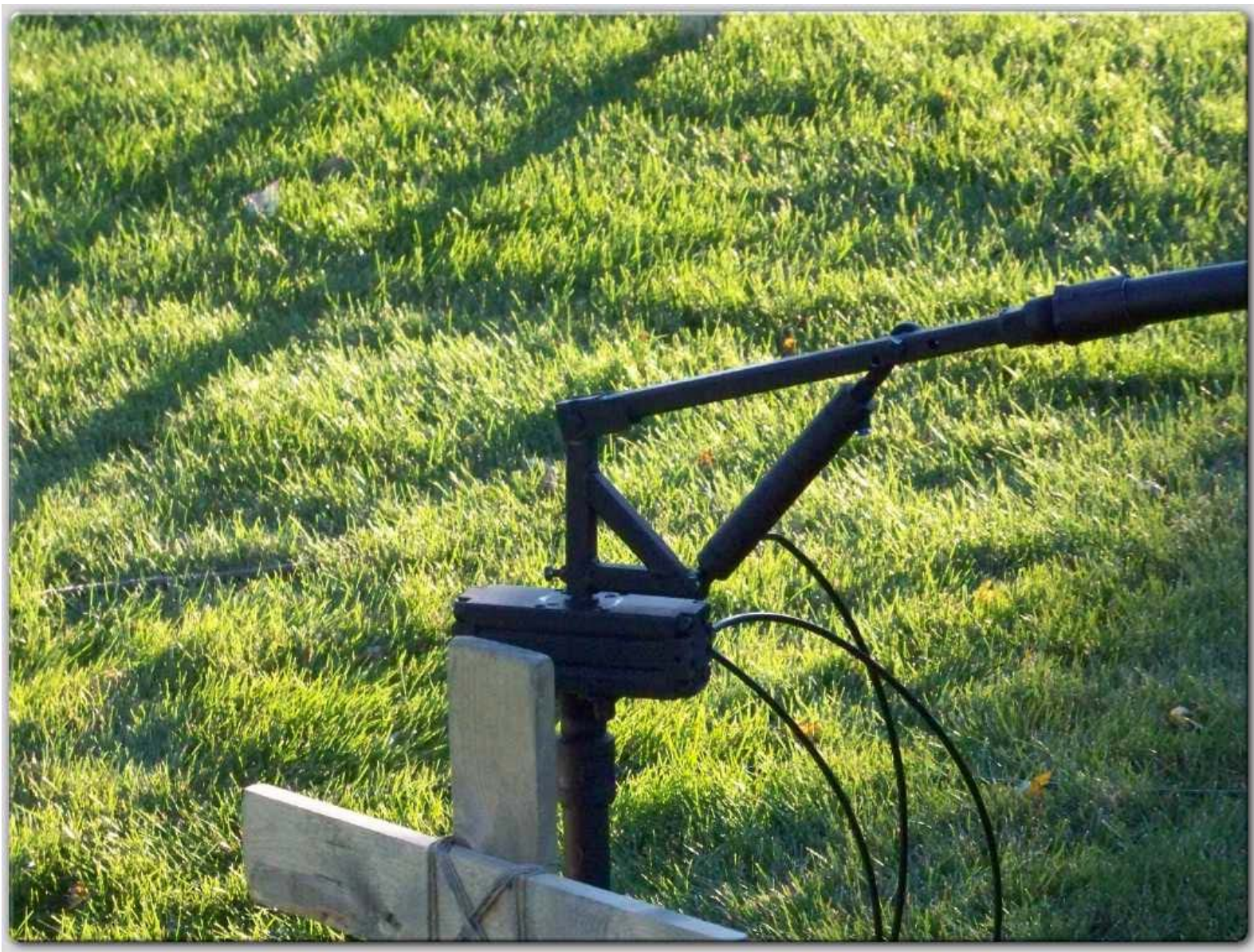
















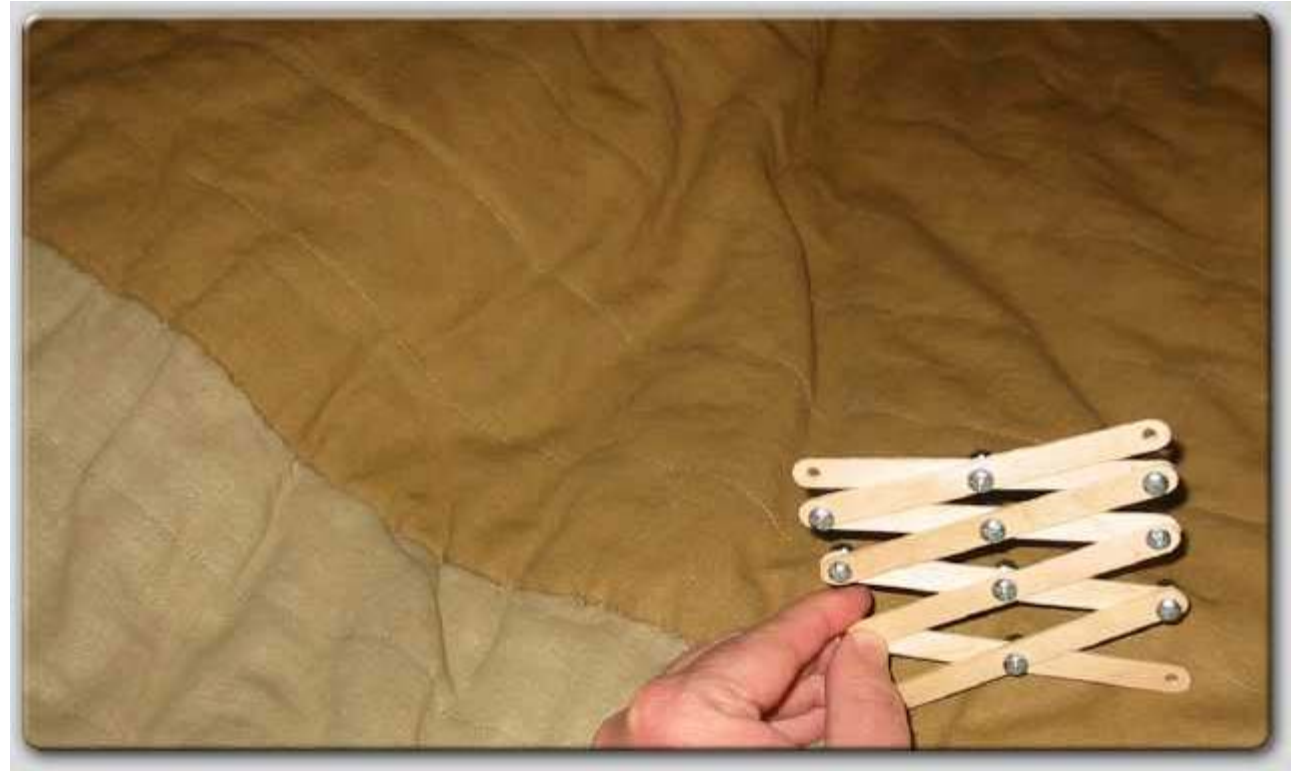




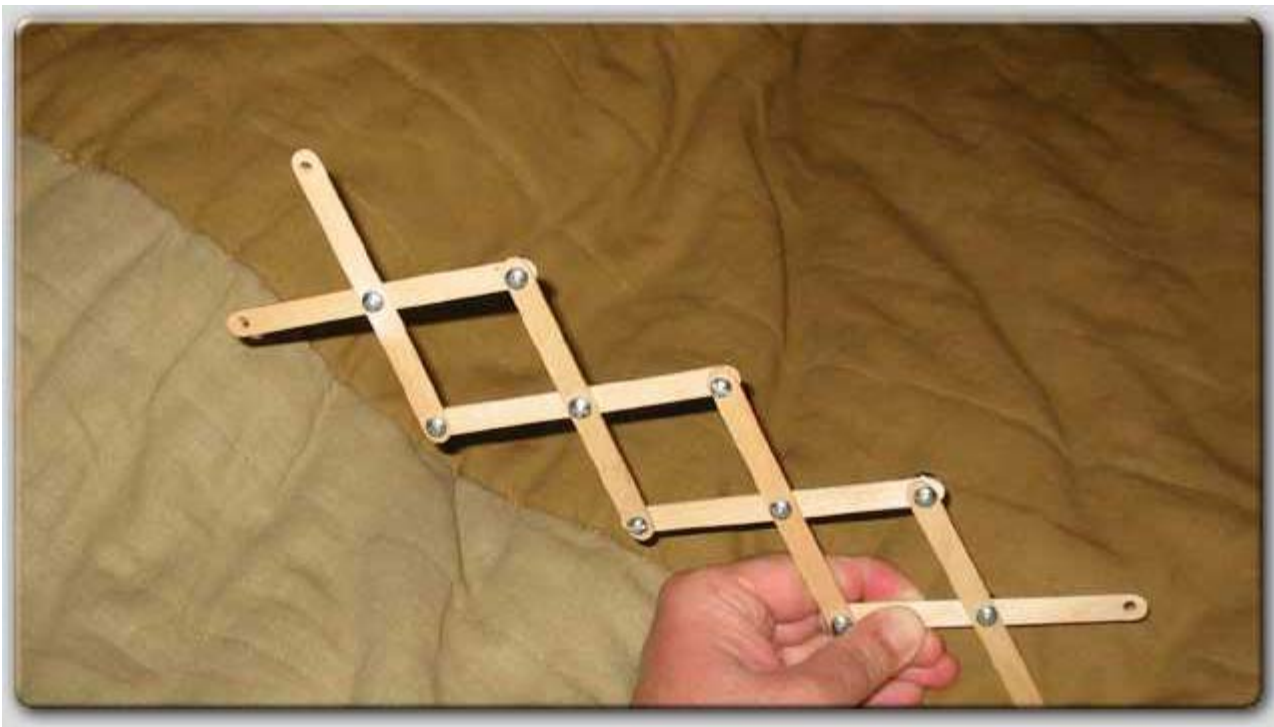




































**First Set-up**  
**The Initial Testing of the Left/Right Line**  
[back to Page One](#)  
[to Page 3 Prototype](#)  
[to Page 4 Final Design](#)

So far (Dec 29th, 2004) I have the main left/right line up in the shop. The pulleys are only 18' apart, giving a run path around 16' or so.



Here is the drive wheel set-up on the west side of the shop. At this time I was using a toggle switch to run it.

I haven't decided on end of run stopping yet for this part as the ghost can get wrapped up around the pulley at times. I am using 50lb fishing line at this time.



The free wheel on the east side of the shop was made so it could take out any excess slack on the line. The pulley can be tightened manually with up to 6" of movement.



Here is the ghost, a hardware store plastic bag.





Flying towards you.



And away from you upon mouse over

It travels around 10 ft/sec.

---

Jan 2nd, 2005

A brake mechanism was added to the drive pulley so when the "end-of-run" switch is tripped it would kill the motor and stop the pulley.



I didn't have any solenoid actuators laying around, so I built up an elaborate pneumatic stopper with some spare parts I had laying around to see how effective this would be.

The drive pulley stops on a dime when the end of run switch is activated, but the inertia of the free pulley kept the line and ghost traveling around a good foot or so.

When the electric pull solenoids come in, they will replace the above set-up on the drive pulley and will add one to the free wheeling pulley to stop the ghost line.



I picked this one from [SurplusCenter.com](http://SurplusCenter.com)

Its specs should provide the force needed to act as a pulley brake and will make the set-up much easier than the above pneumatic one. Nope, didn't work as well as I thought, so the air cylinder stayed.

I want the across line perfected first before adding the in/out line. A possible mistake, but I do/did have 301 days till Halloween at this report entry.

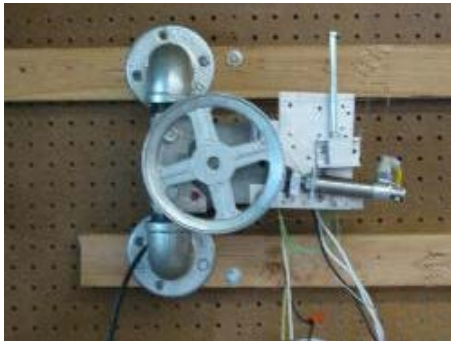
# BOURMO'S FLYING GHOST SYSTEM

## The Prototype Design

[back to Page One](#)  
[to Page 2 Initial Testing](#)  
[to Page 4 Final Design](#)

Here are the pics of the final testing set-up.

Shown here is the left/right line set-up. I ended up changing to a 6" pulley to slow down the ghost to make it easier to control.



If the line pulley travels too far either left or right, the 'end of run' limit switch will stop the motor in that direction and activate the air cylinder to stop the line more quickly. The bolts act as a line guide for the 50 lb fishing line, otherwise the fishing line would be pulled over too much and jump off the pulleys.

Maybe by adding some end cushions for the line tightener/pulley mechanism, the pulley brake may not be needed.



The line tightener/pulley is shown here which is part of the left/right line. A little crude, but it gets the job done.

A couple back shot photos showing the limit switches for the end of run stopping.



Here is one of the motor mount brackets I milled up for future mounting onto whatever I pleased.



Here is the motor/pulley set-up for the second line that moves the ghost in and out. Here too, I went to a smaller pulley for less speed.

The small middle pulley was needed to wrap the line around the bigger pulley for better traction. Not shown, I did glue in a leather cord inside the larger pulley otherwise the line would still slip due this line does not have that much tension on it.



Due to the geometry of this set-up. The in/out line is shorter at the middle of the left/right line and needs to lengthen out when it gets to either the far left or right side.

The slack adjuster is made from 2 drawer slides. The photo above is a single slide





and I ended up adding a second slide onto for more travel when/if needed later on.



An earlier pic with the larger pulley on then, but it does show the 2 bolts mounted up front to act as a line guide for the in/out line.



The in/out line doesn't have any limit stops like the left/right line due to the length changing and was just more complicated to add.

The line travels through a plastic tube instead which allows the ghost to stop at each end but the line still travels on. I did add a piece of leather inside the tube for a little grippage.

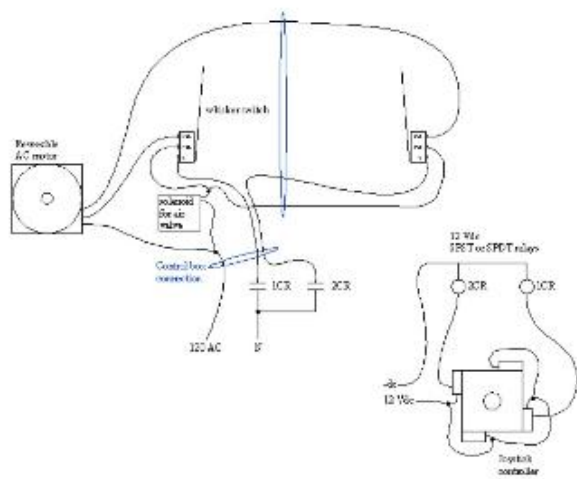


Currently, the ghost is controlled manually by this home-made controller. The joystick is from Happ Controls and the enclosure box was from RadioShack. Inside, there is a 110 to 12vdc adaptor to provide the joystick with low voltage for it and then the relays switch the neutral portion of the motors for the correct direction running.

I used 3 prong cords for making it easy to move and plug-in. As below in the wiring diagram, I did use the green wire as a neutral and used plastic nuts and bolts when I mounted the 3 prong outlets instead of metal ones.

The schematic shown here has the joystick to the relays and out to the left/right line motor and limit switches wiring diagram.

It doesn't show the in/out motor control, but all that



required was another set of 12 volt relays and cord to control that motor minus the limit switches and solenoid connections. If you can figure out this drawing, the in/out wiring should be easy.

**NOTE:** I did use 3 prong cords for making simple plug connections and the green wire is NOT an earth ground any longer, I used it for the second neutral needed for the reversible motor.



As used on Halloween 2005

[back to Page One](#)

[to Page 2 Concept Testing](#)

[to Page 3 Prototype](#)

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Here is the link to my Halloween 2005 yard video which shows the ghost in motion outside.

[Click here to Video Page](#)







## [Flying Ghost Video Page](#)

You can play the videos by the on screen viewer or if that doesn't work, you can download one of the files below the screens by doing a Right Click, then Save Target As onto your computer and then watch it that way.

[1.2 meg version](#)

[106K file of black light flight](#)

[2.7 meg version](#)

8138  
10971  
5438  
11140  
7489  
10897  
4055  
11141  
9033  
11138  
8408  
11002  
4642  
10568  
4368  
7062  
48  
14277  
9168  
-1  
7155  
11139  
15  
3682  
11168

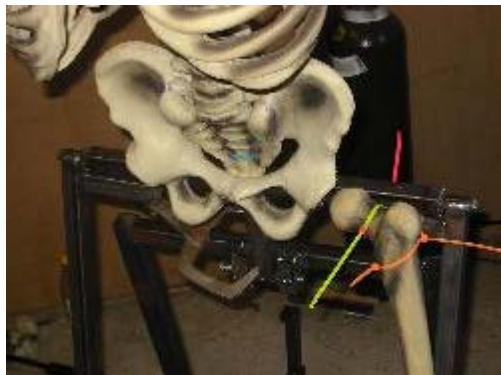
## Page 2 of the Skelerector

[To Video Page](#)

[How-To Pages](#)



The old arms were removable for easier storage



The 2-1/2" bore x 5" stroke cylinder runs at 50-60 psi to lift the skeleton

No springs are used at this time for assistance.





The cylinder connection point is a 3-1/2" lever arm at a 30 degree downward from the pivoting point. When the air cylinder is extended, the rear 4 bar linkage is rotated 90 degrees.

# Bourno's Skelerector Video Page

[or click here to download the video if it doesn't play for you](#)

File size 1.2 meg



## *To Skelerector Home Page*

### **Bourno's How-To Build a Skelerector Page**

[Page 1 - Introduction Page](#)

[Page 2 - Front Bar Assemblies and Rotating Bar](#)

[Page 3 - Rear Bar Assembly](#)

[Page 4 - Lifting Bar and its Assembly](#)

[Page 5 - Base Frame](#)

[Page 6 - Putting all the pieces together](#)

[Page 7 - Pneumatics and the skeleton](#)

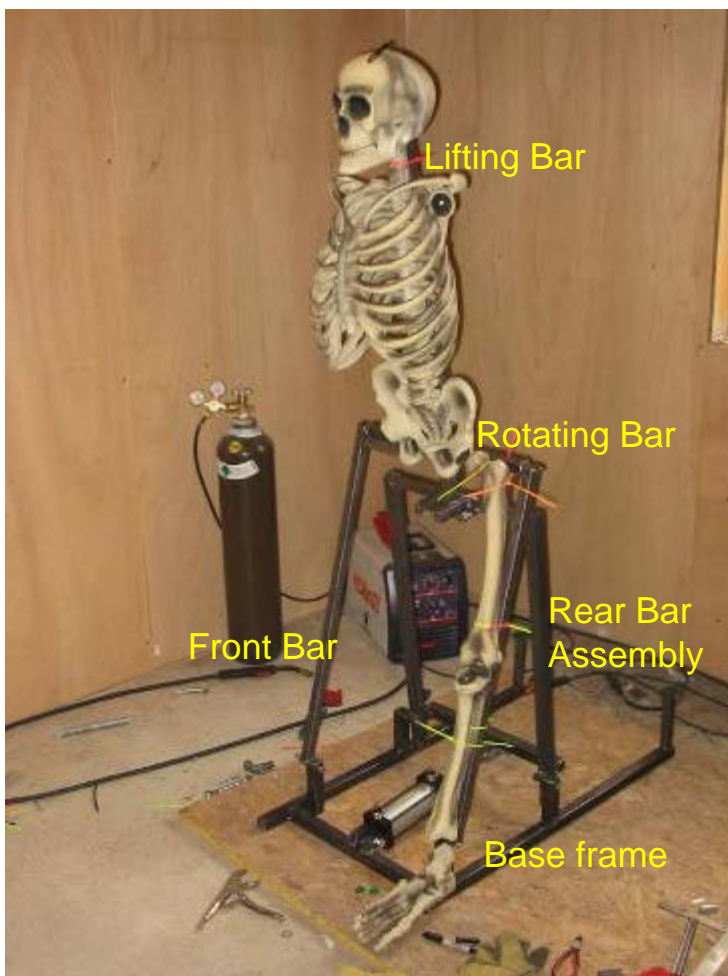
#### INTRODUCTION

The following pages show detailed building pictures on my skelerector. It was designed around the Menards foam skeleton dimension and uses a 2-1/2" bore x 5" stroke air cylinder to actuate it. See my other [skelerector page](#) on details with the BooPack 4-bar software.

For square tubing, I like using 14ga tubing for more strength and welding. The 1" square tubing could be substituted with 16ga, but I would recommend the 14ga material for the 1-1/4" tubing.

All the bolt holes are 3/8". I will show where to place these holes, but you will see that I do substitute 3/8" bushings at times afterwards. This is my personal preference in thinking that these will last years and years to come and not get some oval holes later on.





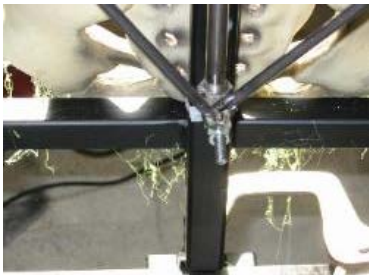
Let's start with some words I may be using and which pieces those are by showing them in the picture shown to the left.

Head back up to the top of the page and onto the next topic.

# Bourn Again Creation's Halloween Page

## *Skelerector Added Arms Page*

Moving arms added the Summer of 2007.









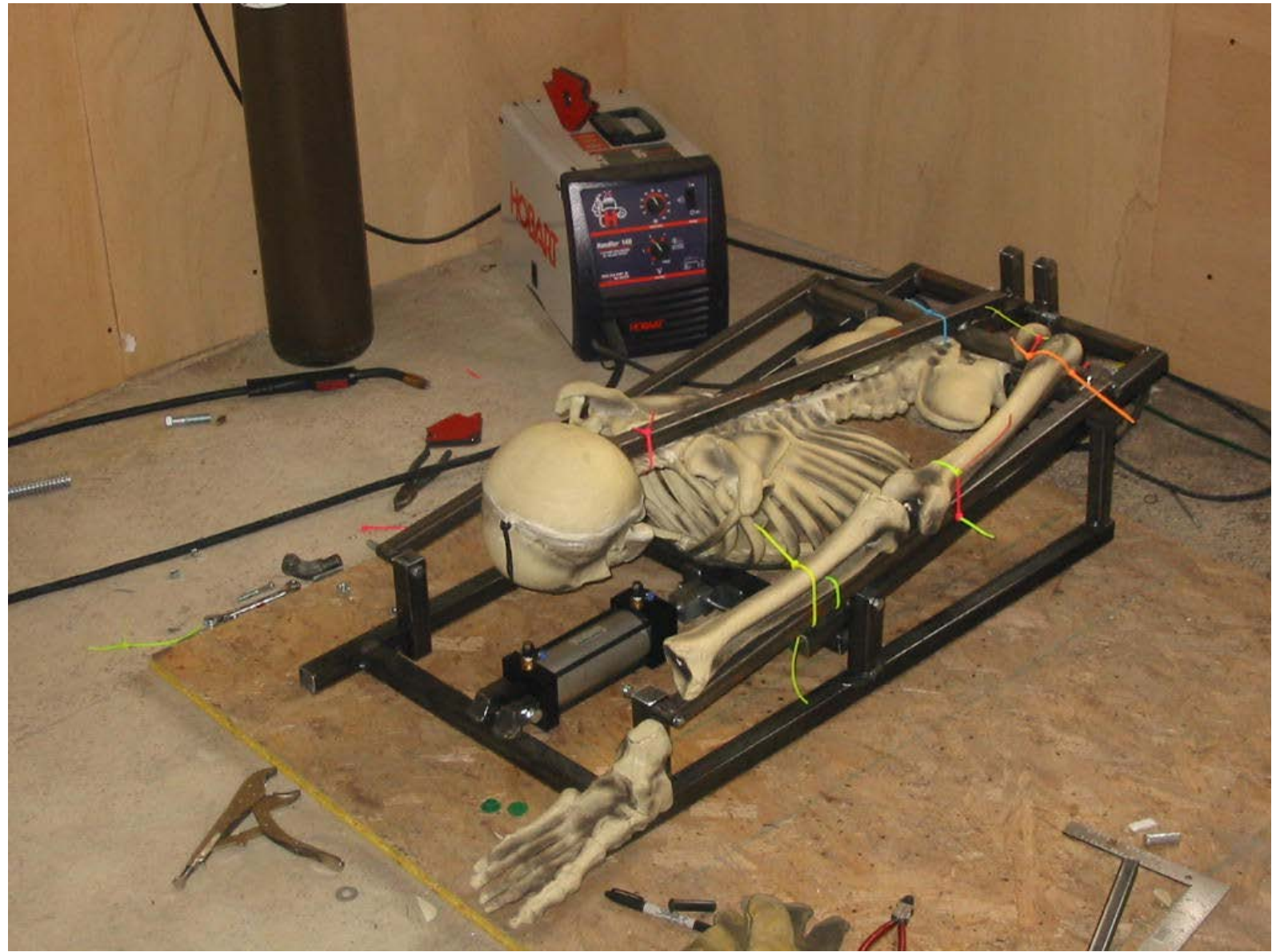




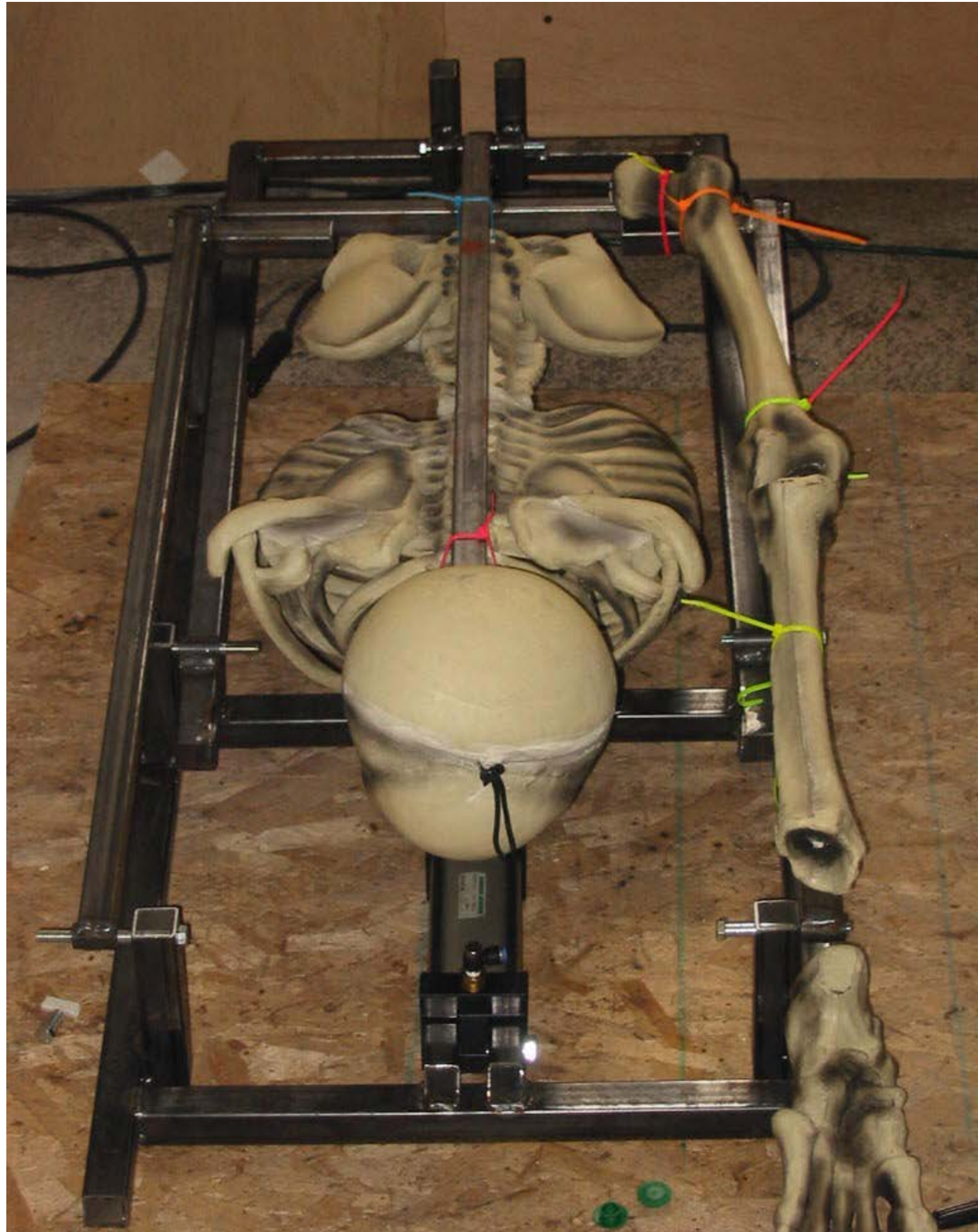






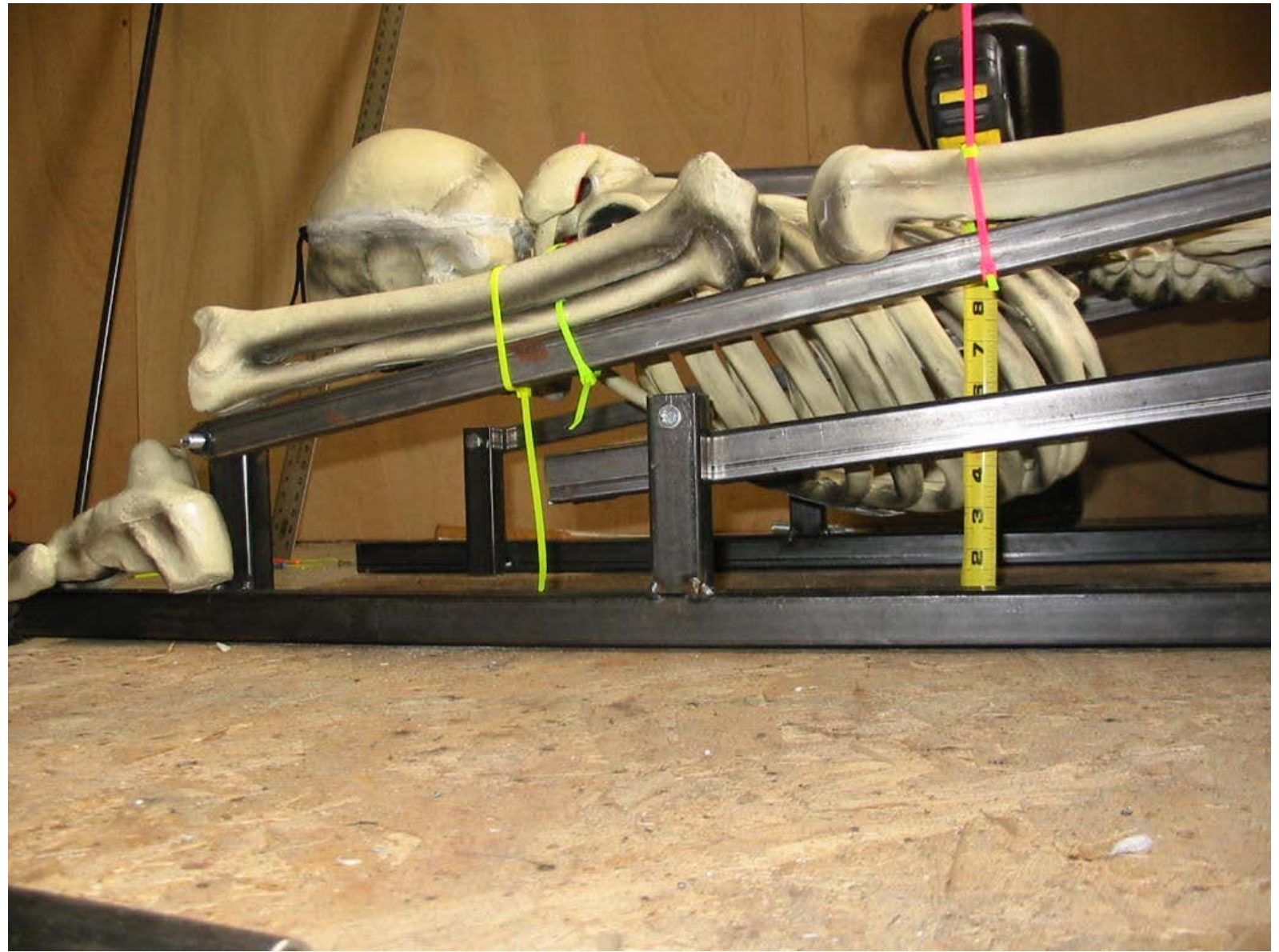












# Video Page for the pneumatic Scarecrow



```
'=====
'
' File..... Scare_crow_test.SXB
' Purpose... Run arms of an animatronic scarecrow
' Author.... Wesley Bourn
' E-mail....
' Started... May 21, 2006
' Updated... May 27, 2006
'=====
```

```
'-----
' Program Description
'-----
'
```

```
' Simple LED blinker using HIGH and LOW.
```

```
'-----
' Device Settings
'-----
```

```
DEVICE      SX48, OSC1MHZ, TURBO, STACKX, OPTIONX
FREQ        1_000_000
```

```
'-----
' IO Pins
'-----
```

motion	VAR	RE.7	' motion detect
left_arm	VAR	RE.3	' Left forearm
left_sh	VAR	RE.2	' Left shoulder
rt_arm	VAR	RE.1	' Right arm
rt_sh	VAR	RE.0	' Right shoulder
blink	VAR	RE.6	' indicate which program is gonna run

```
'-----
' Constants
'-----
```

```
timer VAR byte
choice VAR byte
idx VAR byte
```

```
'=====
' PROGRAM Start
'=====
```

```
'-----
' Program Code
```

' -----

```
Start:
  TRIS_E=$80          ' one input, rest outputs
timer = 123
DO                    ' wait for motion detect and generate random #
  RANDOM timer
LOOP UNTIL motion = 0

choice = timer // 10  ' make the random be a 1 - 10
choice = choice + 1

if choice <= 6 then   ' GET ROUTINE # 1 HOPEFULLY 60% of time

  high blink
  pause 250
  low blink
  pause 250

  HIGH left_sh        ' start left arm in
  PAUSE 750
  HIGH left_arm        ' start left forearm in
  PAUSE 4000
  LOW left_arm         ' release left forearm momentarily
  PAUSE 1000
  HIGH left_arm        ' move left forearm back in

  HIGH rt_sh          ' rotate right shoulder
  PAUSE 2500
  HIGH rt_arm          ' start to raise arm
  PAUSE 2300
  LOW rt_sh            ' swing right arm down
  PAUSE 2000
  LOW left_arm         ' start to reset the arms
  LOW left_sh
  PAUSE 1000
  LOW rt_arm
  GOTO nearend
endif

if choice <= 8 then   ' GET ROUTINE # 2 HOPEFULLY 20% OF TIME

  for idx = 0 to 1
    high blink
    pause 250
    low blink
    pause 250
  next

  HIGH left_sh        ' Just do a arms in, grab type motion
  HIGH rt_arm
  PAUSE 3500
  LOW left_sh
```

```
LOW rt_arm
GOTO nearend
endif
```

```
for idx = 0 to 2
  high blink
  pause 250
  low blink
  pause 250
next
```

```
HIGH rt_sh          ' WELL, IF NOT OTHER 2 CHOICES, SHOULD BE THIS ONE THEN 20%
PAUSE 2500          ' act like a swing left arm motion, but don't
HIGH rt_arm
PAUSE 2800
LOW rt_arm
PAUSE 3000
LOW rt_sh
```

```
nearend:           ' pause then go back to beginning
```

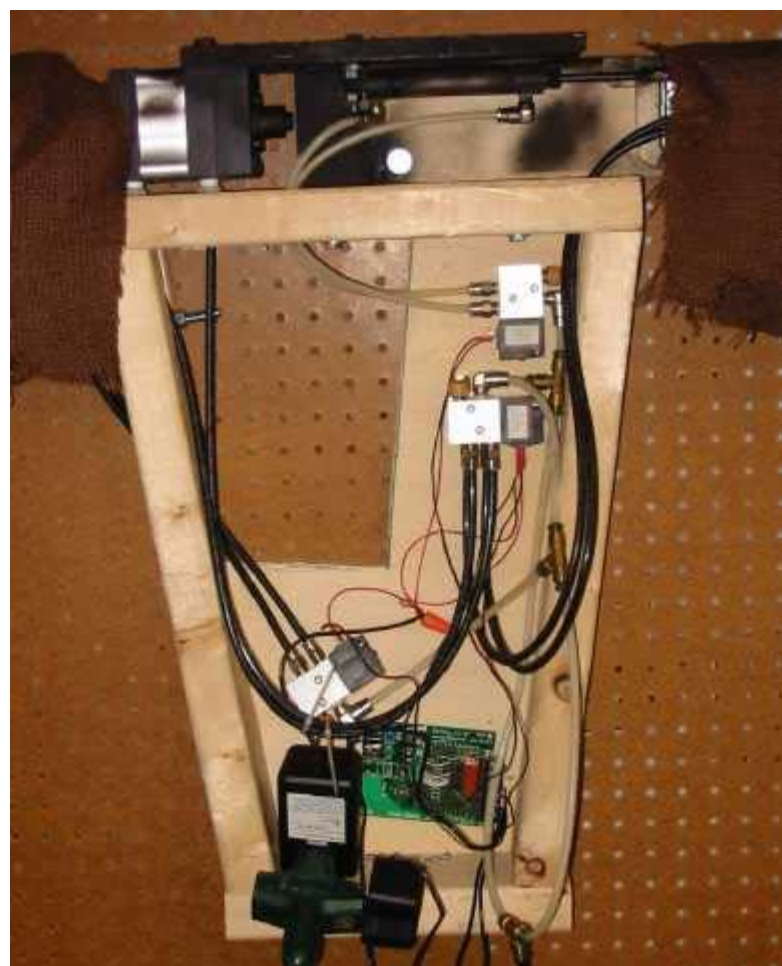
```
PAUSE 10000        ' wait 10 seconds to slow activation down
```

```
GOTO Start         ' back to beginning for motion detect
```

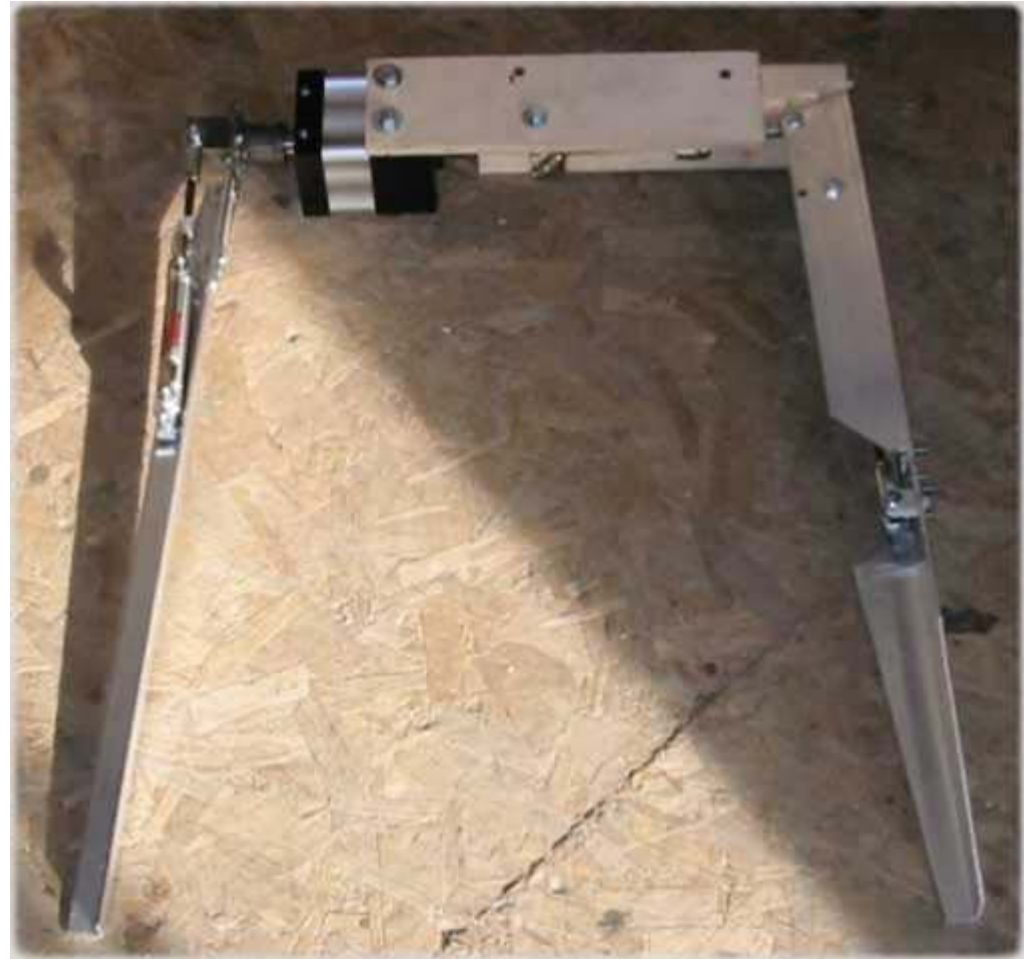












left\_arm1.jpg %d x %d pixels



left\_arm1.jpg[8/26/2015 4:17:17 PM]

left\_arm\_forward.jpg %d×%d pixels

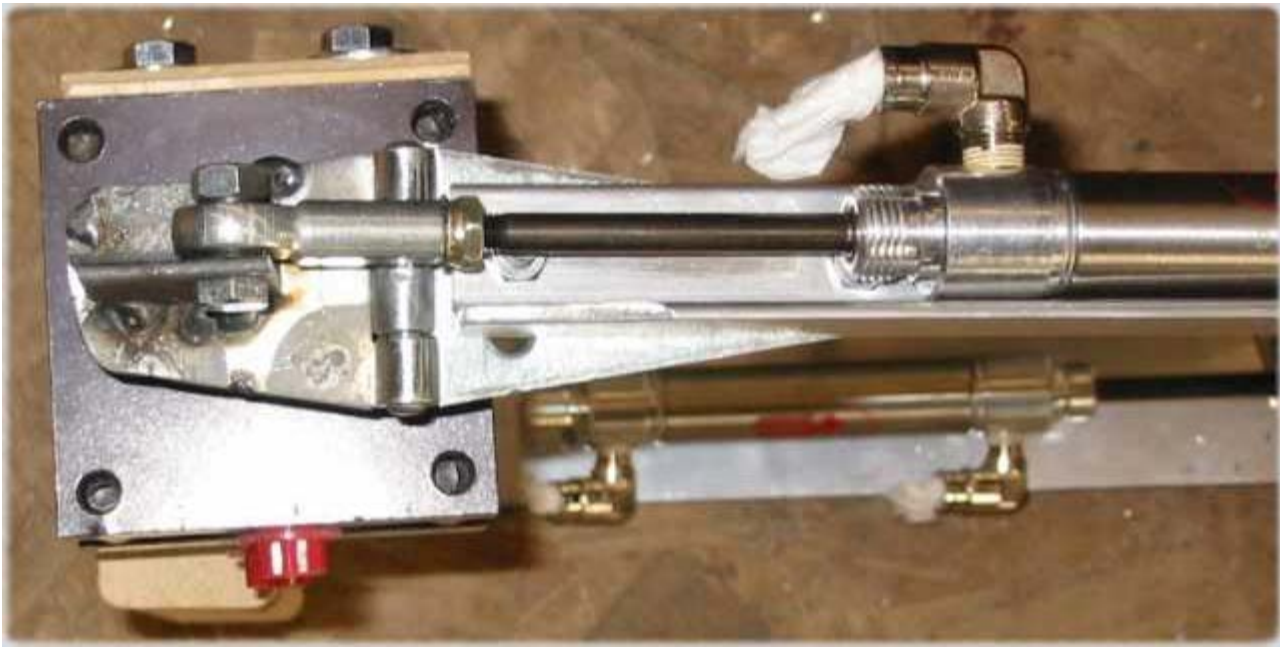


left\_arm\_forward.jpg[8/26/2015 4:17:17 PM]











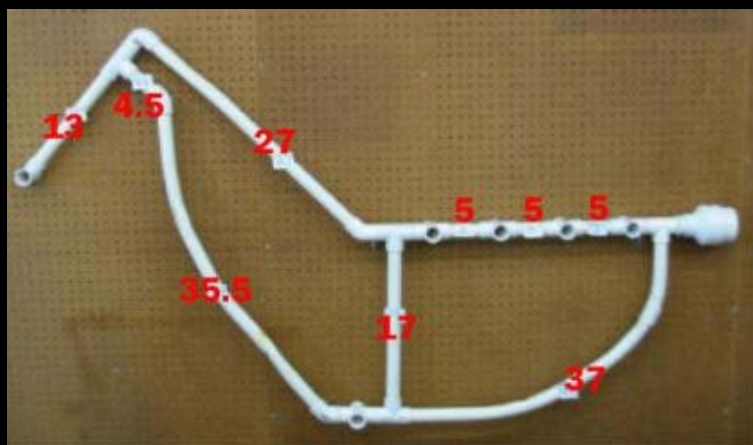
## Bourn Again Creation's Halloween Page

# Headless Horseman

Page 2 "the initial look and assembly of the horse"



The ribs and main body are made out of 1" thin walled PVC piping with 1" PVC pipe fittings.



The head is made from 2" thick blue polystyrene (styrofoam) and hot glued

to a spacer.



Going with a Malibu light system for a low voltage lighting system. Here, the lamp holder a cut down some.



Here is with the head painted and the light eyes inserted and connected to the wiring. Thinking either just painting the bulb red or adding a red lens cover.



A quick, early idea for having the front part of the horse covered with cheese cloth and then the rear rest will be skeleton.

[Previous Page](#)

[Home Halloween](#)  
[Team BAC page](#)

[Next Page](#)

## Bourn Again Creation's Halloween Page

# Headless Horseman

Page 3 "adding the final look and corpsing of the horse"

This is just cheese cloth dyed black for the covering.







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## Bourn Again Creation's Halloween Page

# Headless Horseman

### Page 4 "the added special effects"

With the usage of the pvc piping, there is a fog machine and a fan blowing into the back part of the tail section to travel to the head and finally out the nostrils of the horse to give it the 'snort' from hell. Red glowing eyes also accent this look.



The 'trampling' front leg action is gonna be for next year.

OK, it's next year, and.....ta-da (sept 2005)  
well, the motor shot at least



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[Home Halloween](#)  
[Team BAC page](#)

[Next Page](#)



## Bourn Again Creation's Halloween Page

# Headless Horseman

### Page 6 "the rider and its construction"

I was going to make a clothed rider, but cheated when I found some 6 foot foam skeletons at Menards (similar to the Shopper Pharmacy skeletons found in Canada)

With some modifying, I made the arms solid instead of being held together by hooks. Along with the upper leg bones, the lower leg bones just flop around loose.



The skeleton back support will get cleaned up and painted black and add a tattered black cape to hide it also. Some rod support is needed yet for the right arm so it can

hold a lighted foam pumpkin.



This is a Walgreen skull I bought. I chopped off the foam skeleton head (it doesn't look evil) and replaced it with this one. This flaming skull is sweet.

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## Bourn Again Creation's Halloween Page

# Headless Horseman

### Page 7 "new latex skin for the horse"

In order to make the horse more durable for the next coming years, I decided to give the cheese cloth a make-over by adding a latex covering from what I learned at IronStock 2005 from Frank's demo

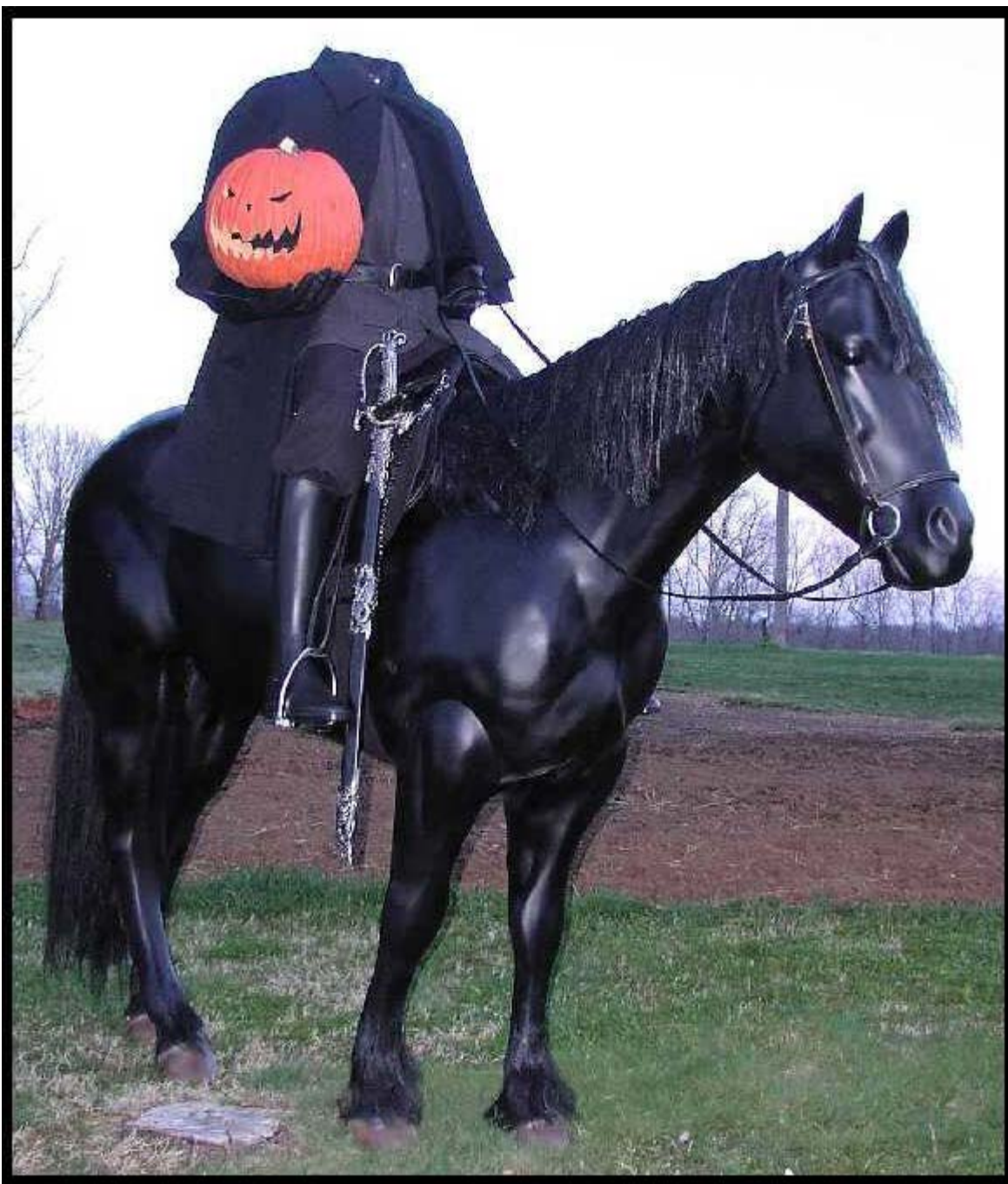




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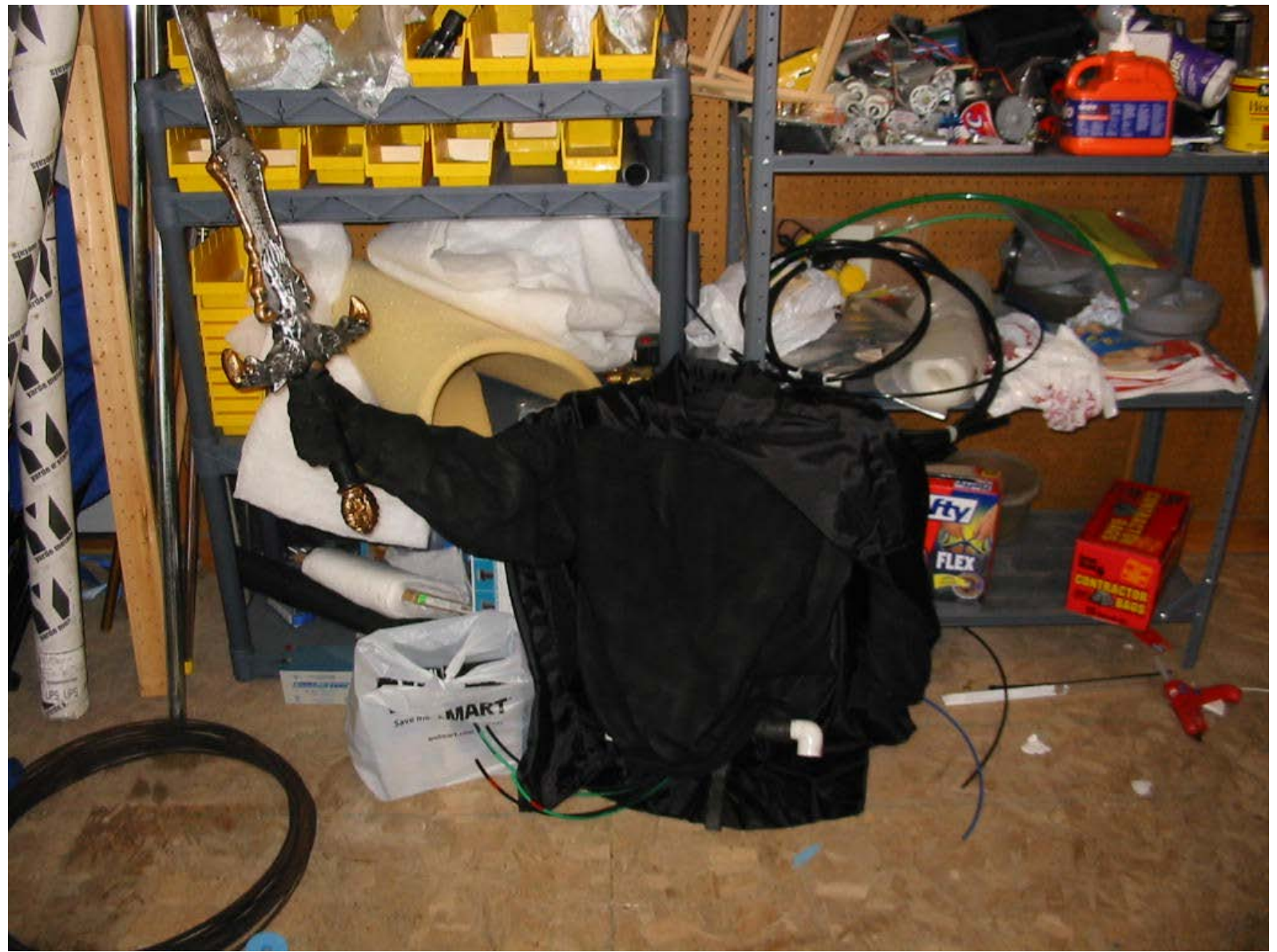














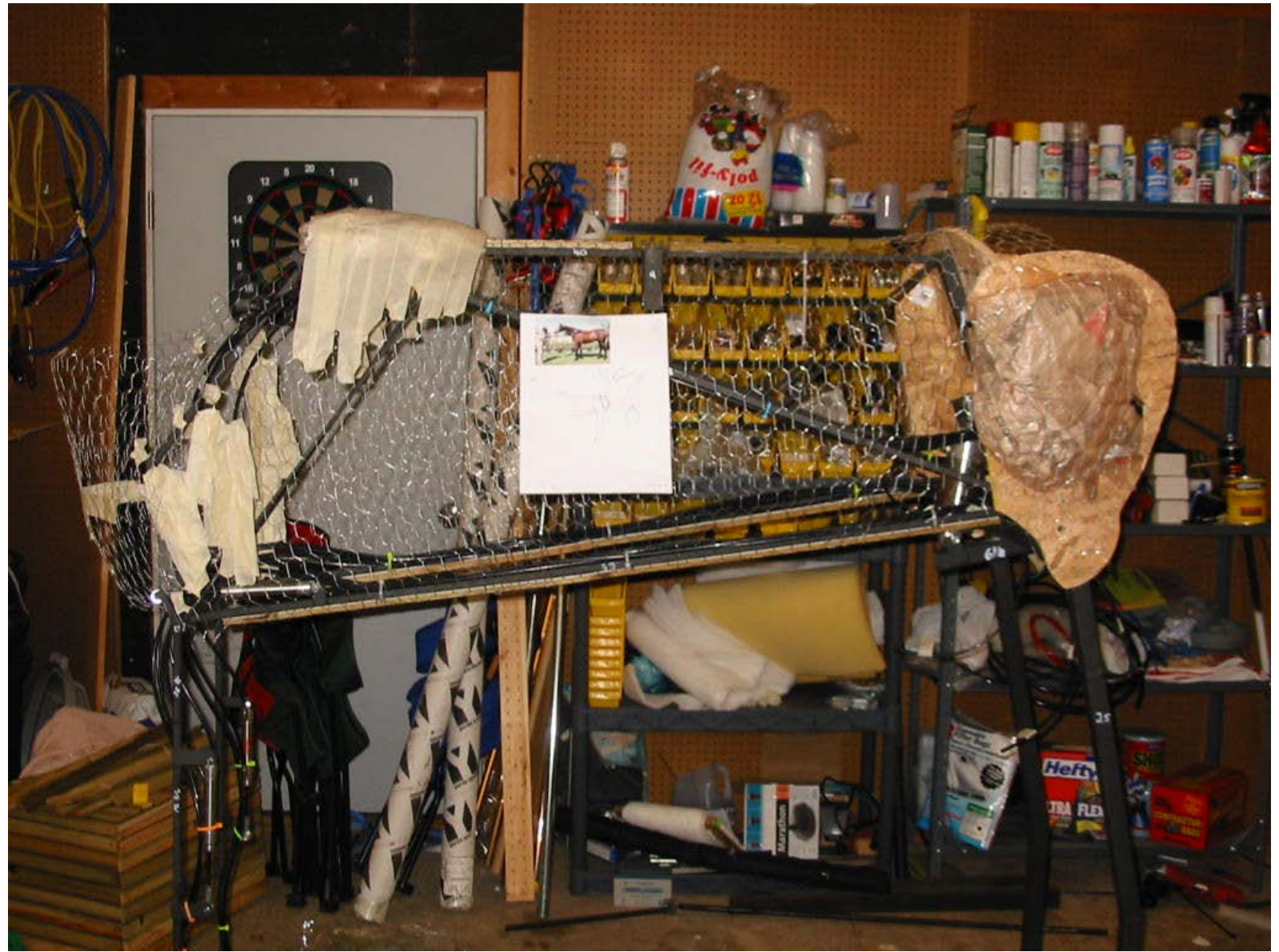






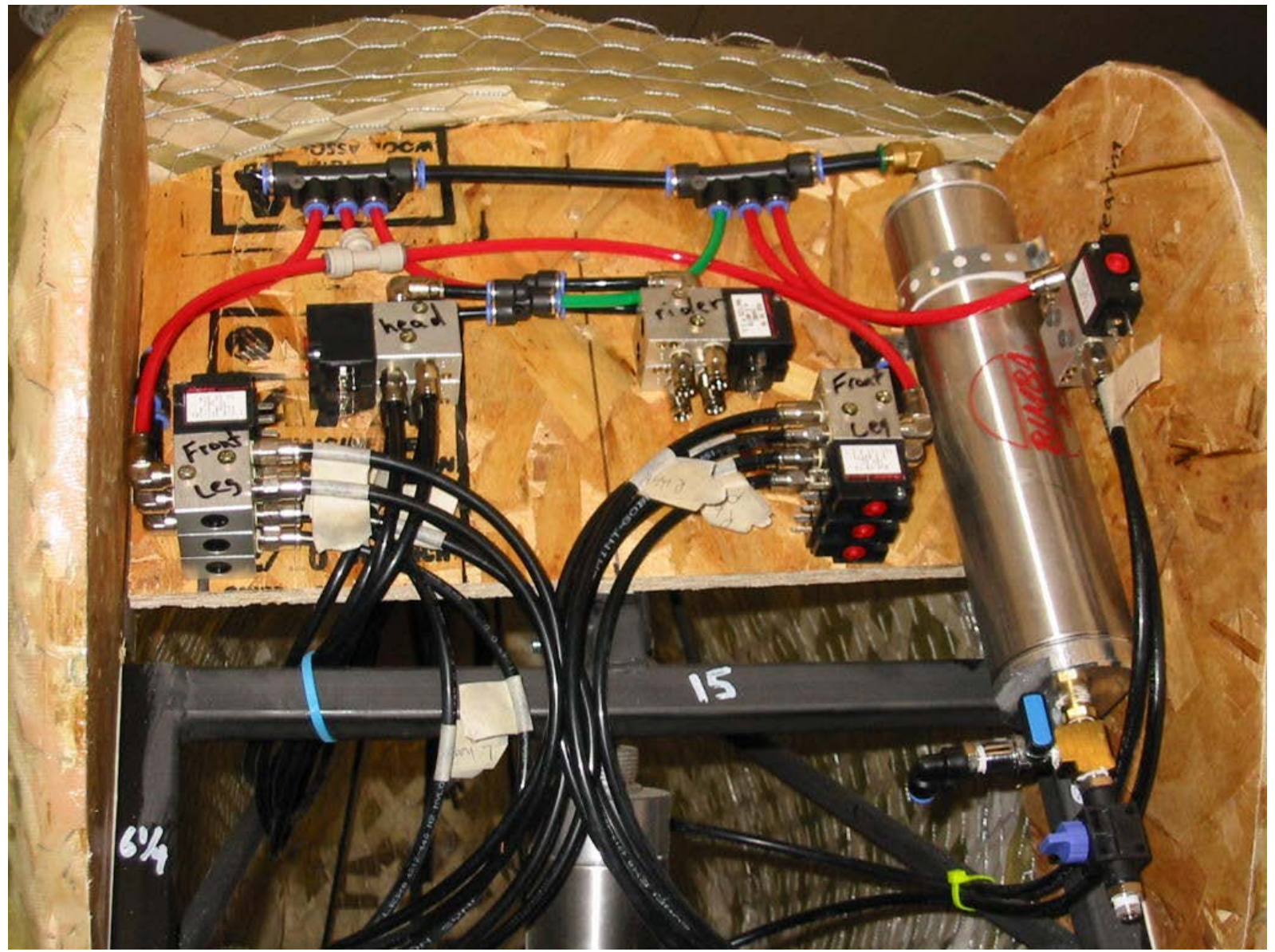




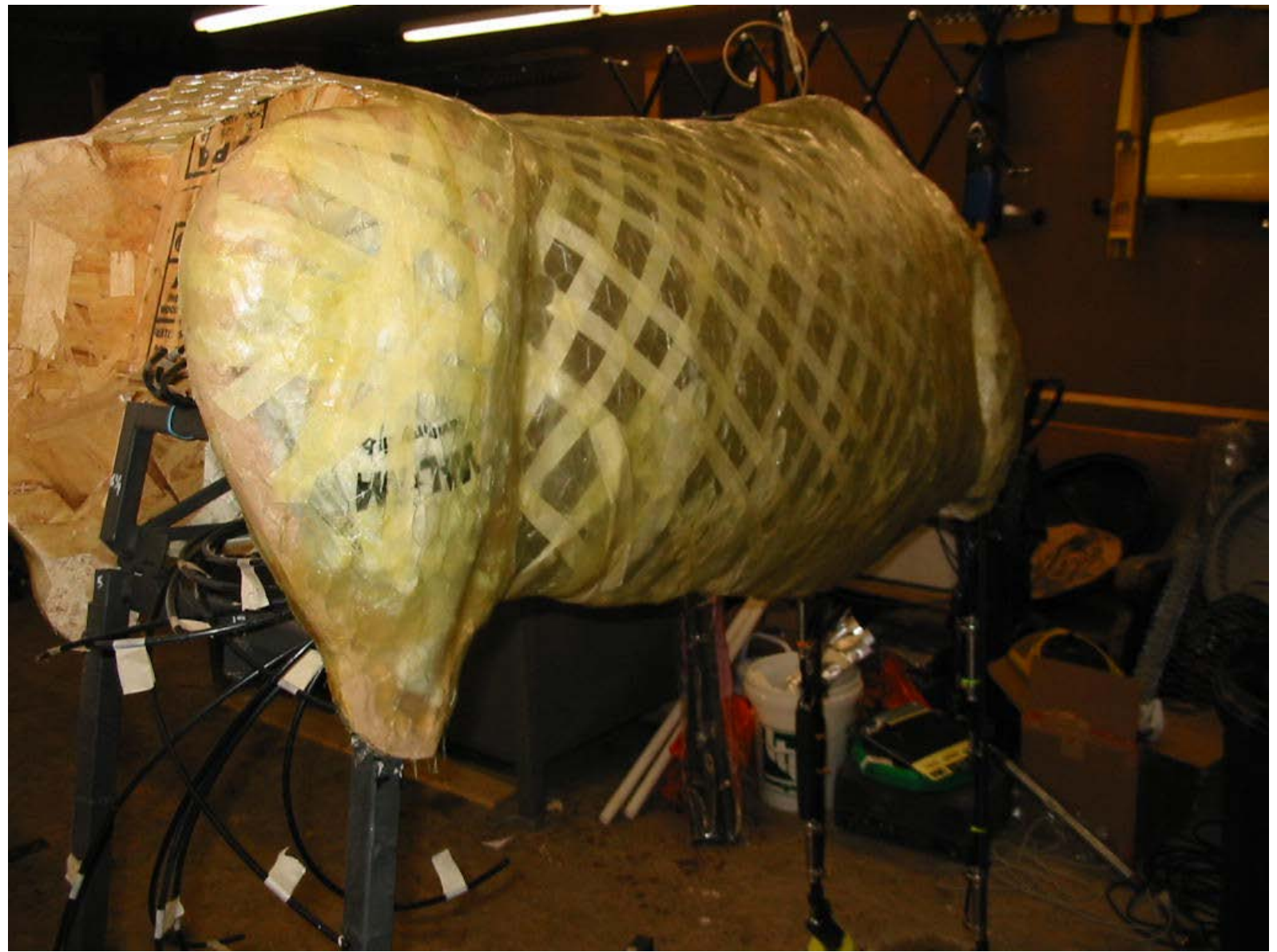














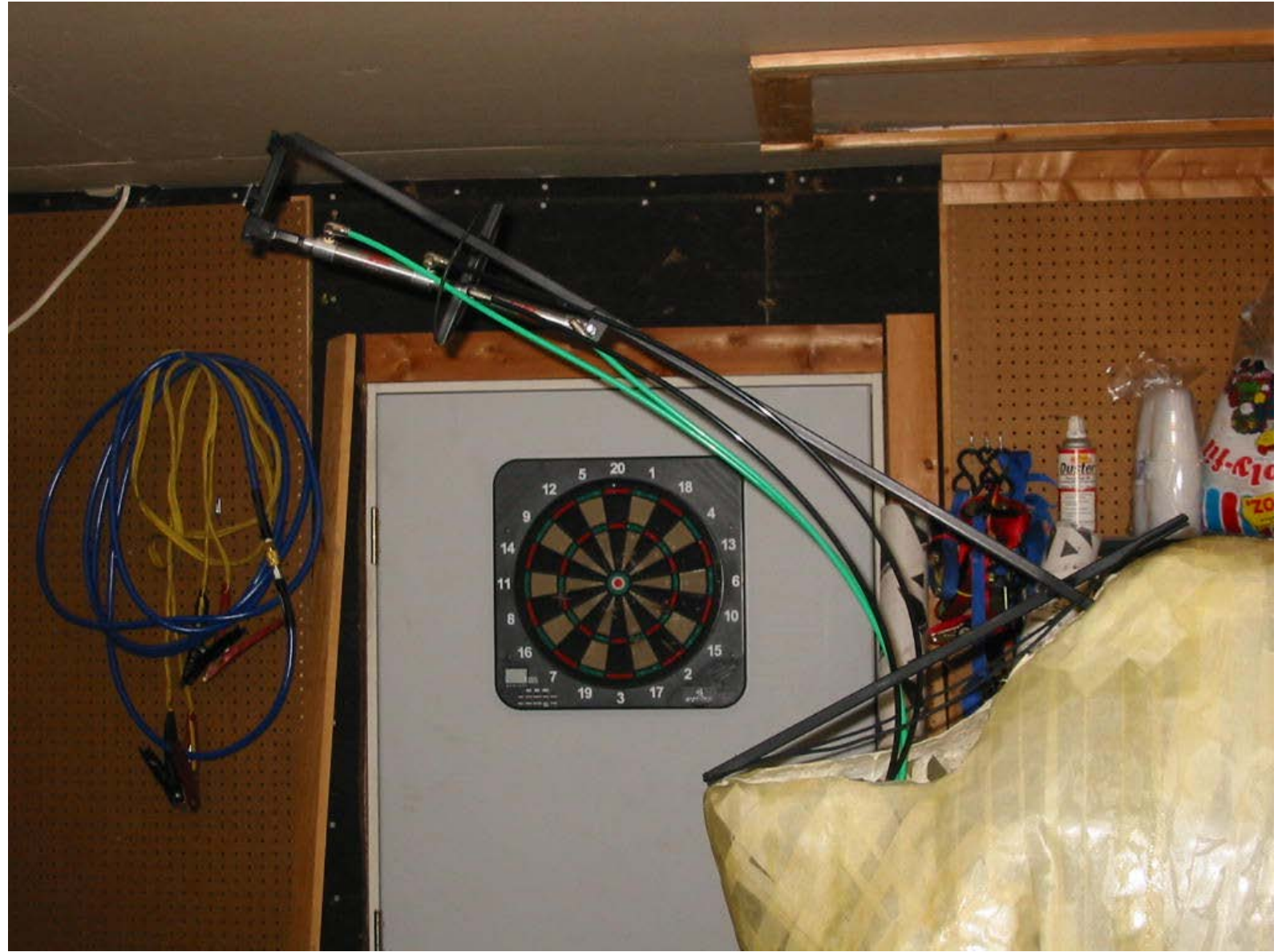




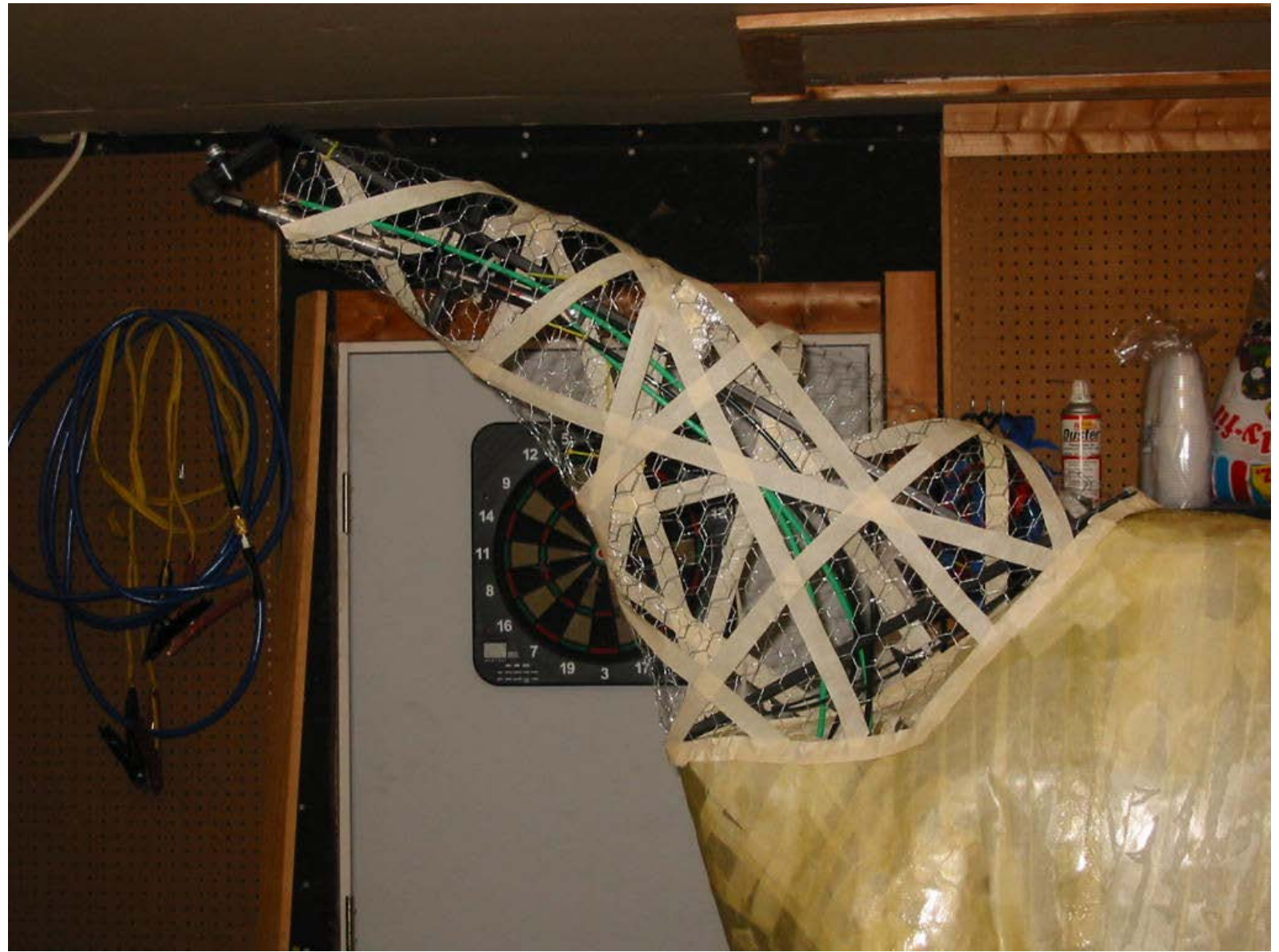






























































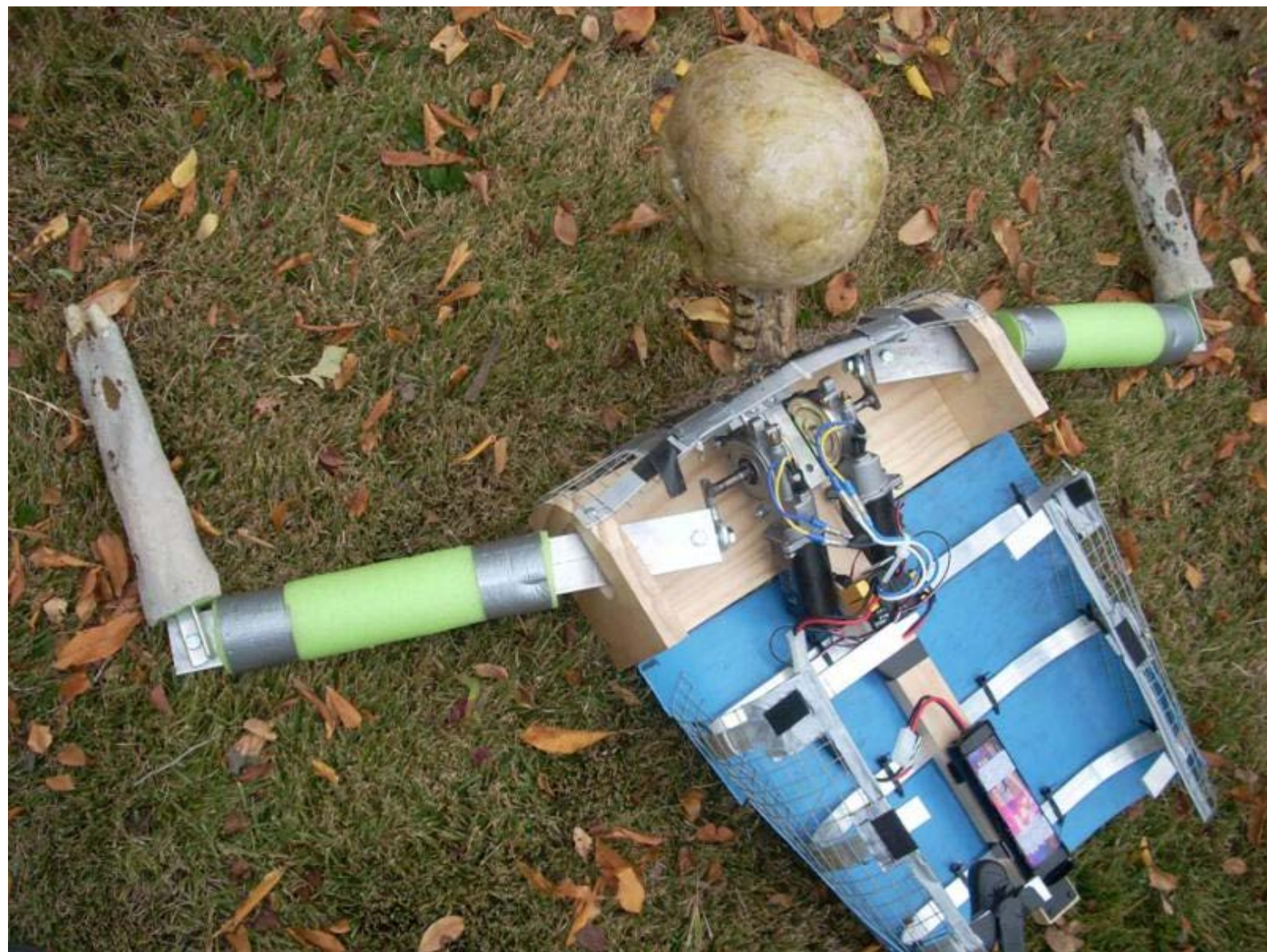














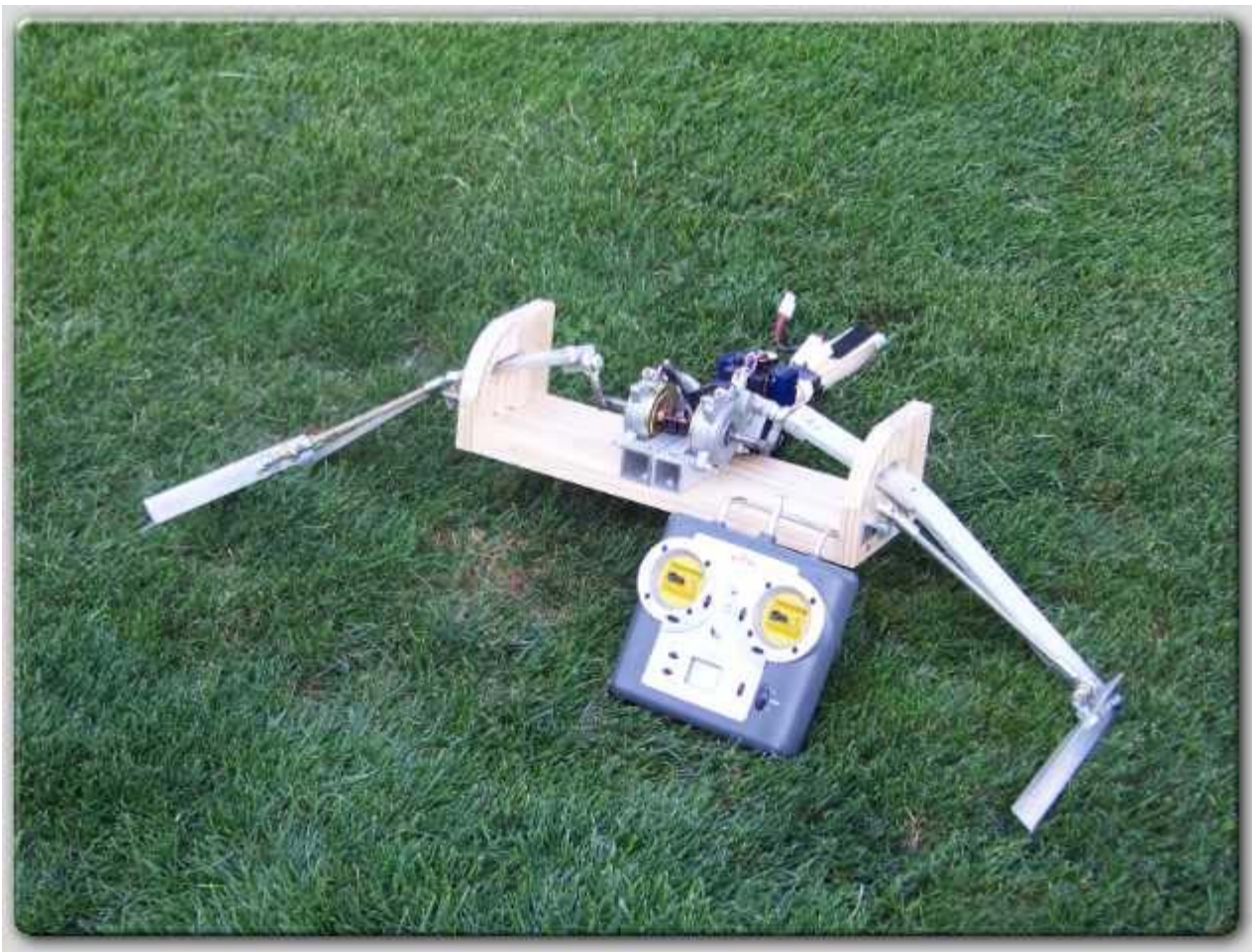




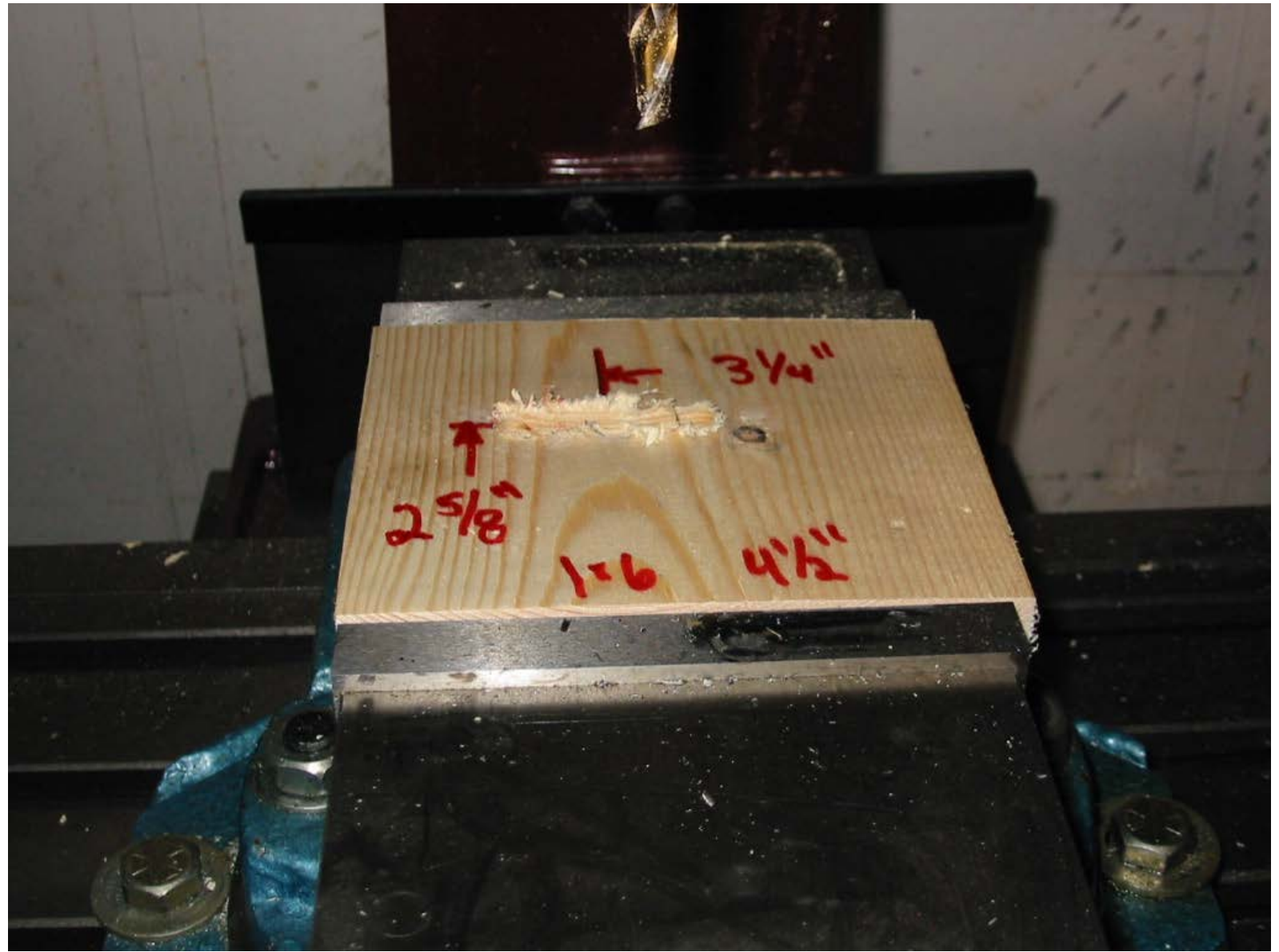




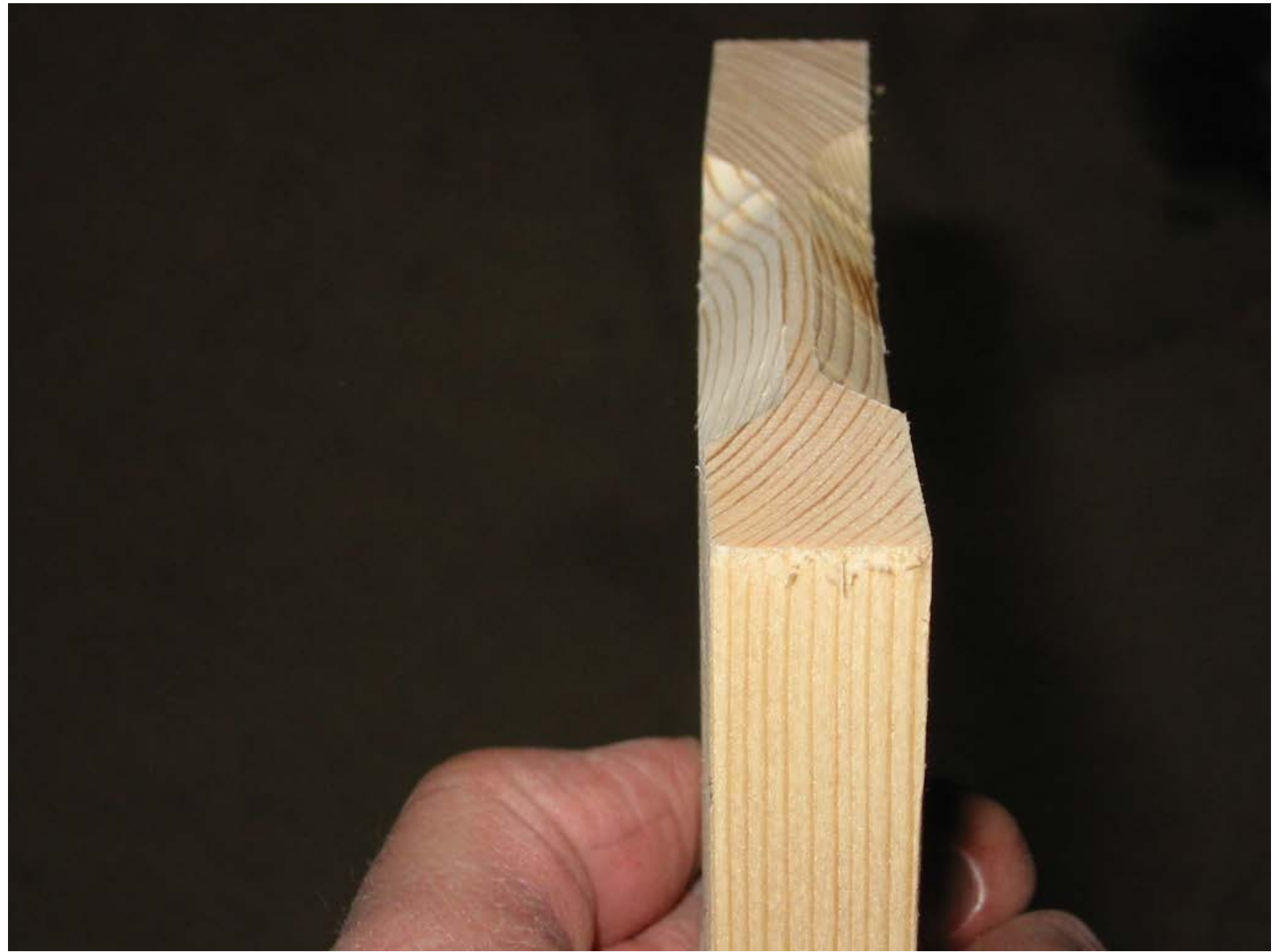












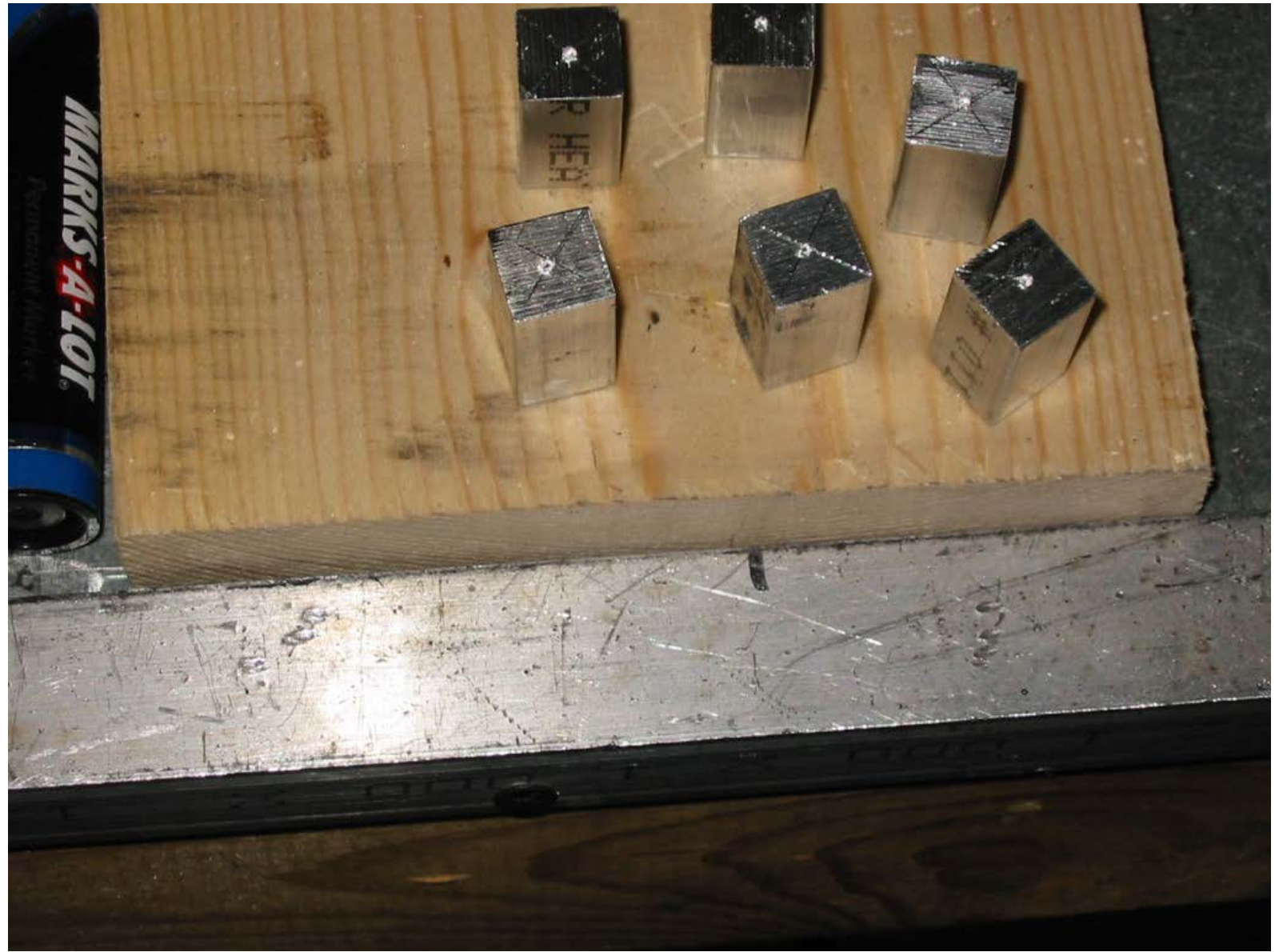










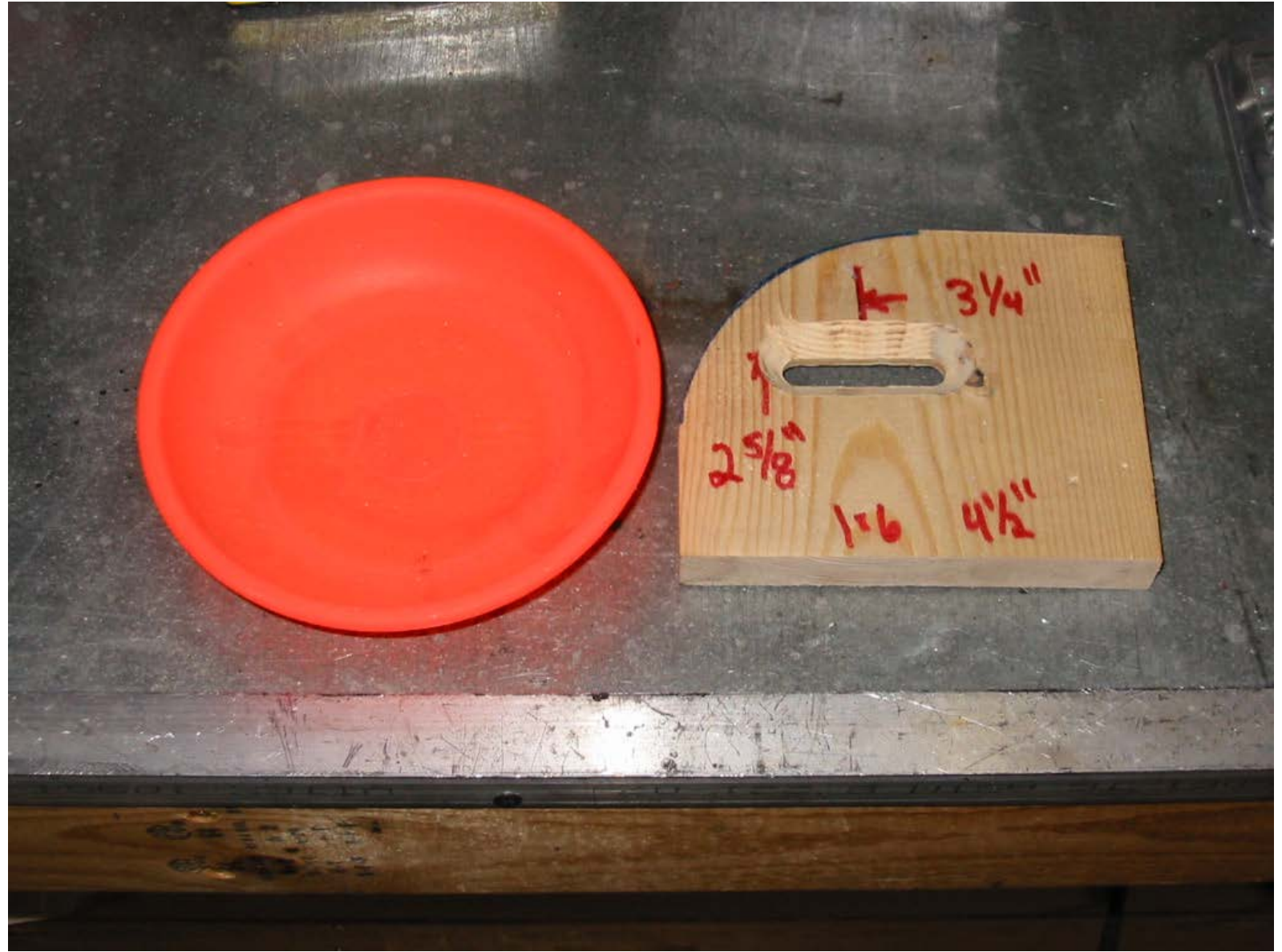










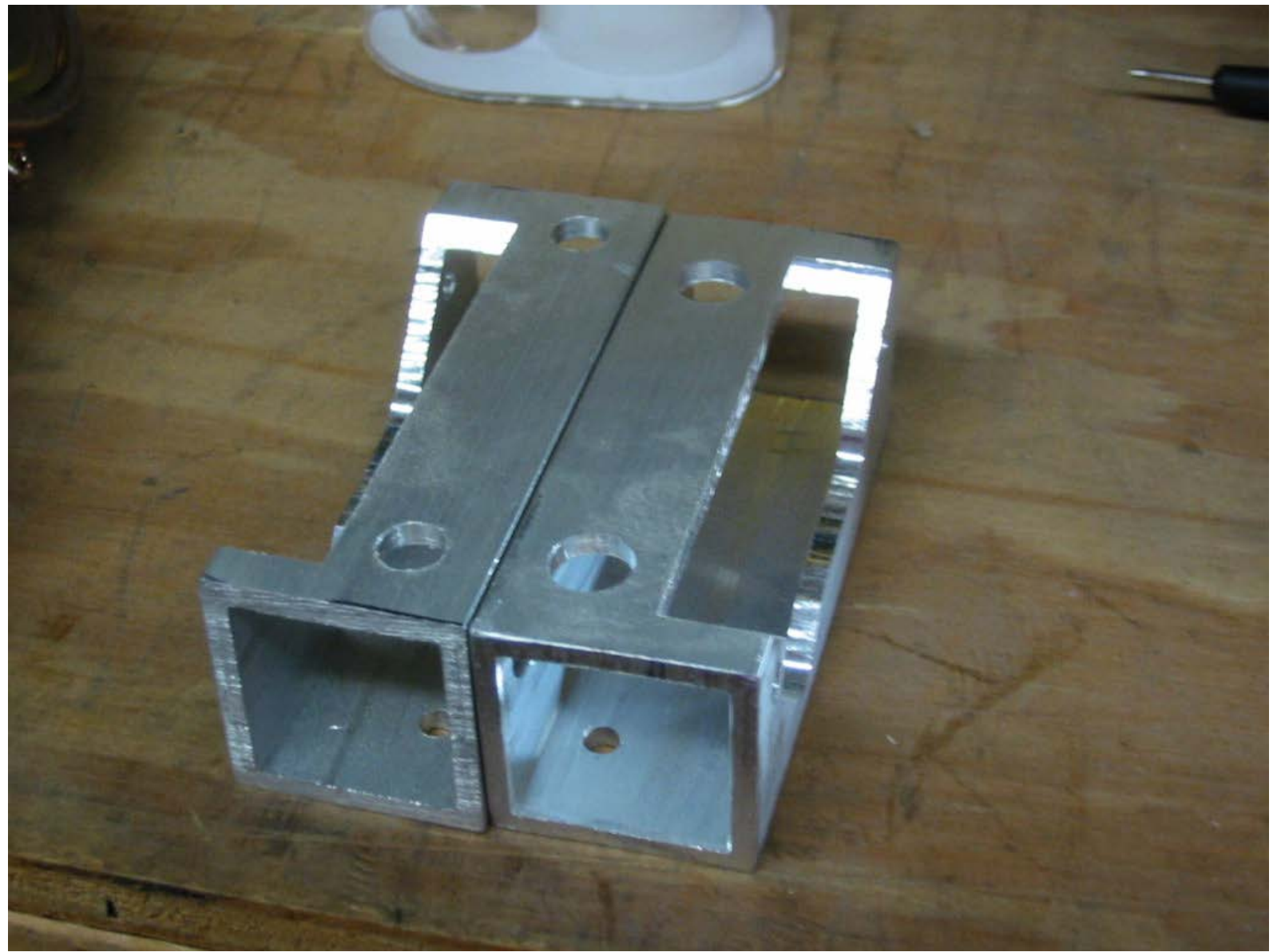


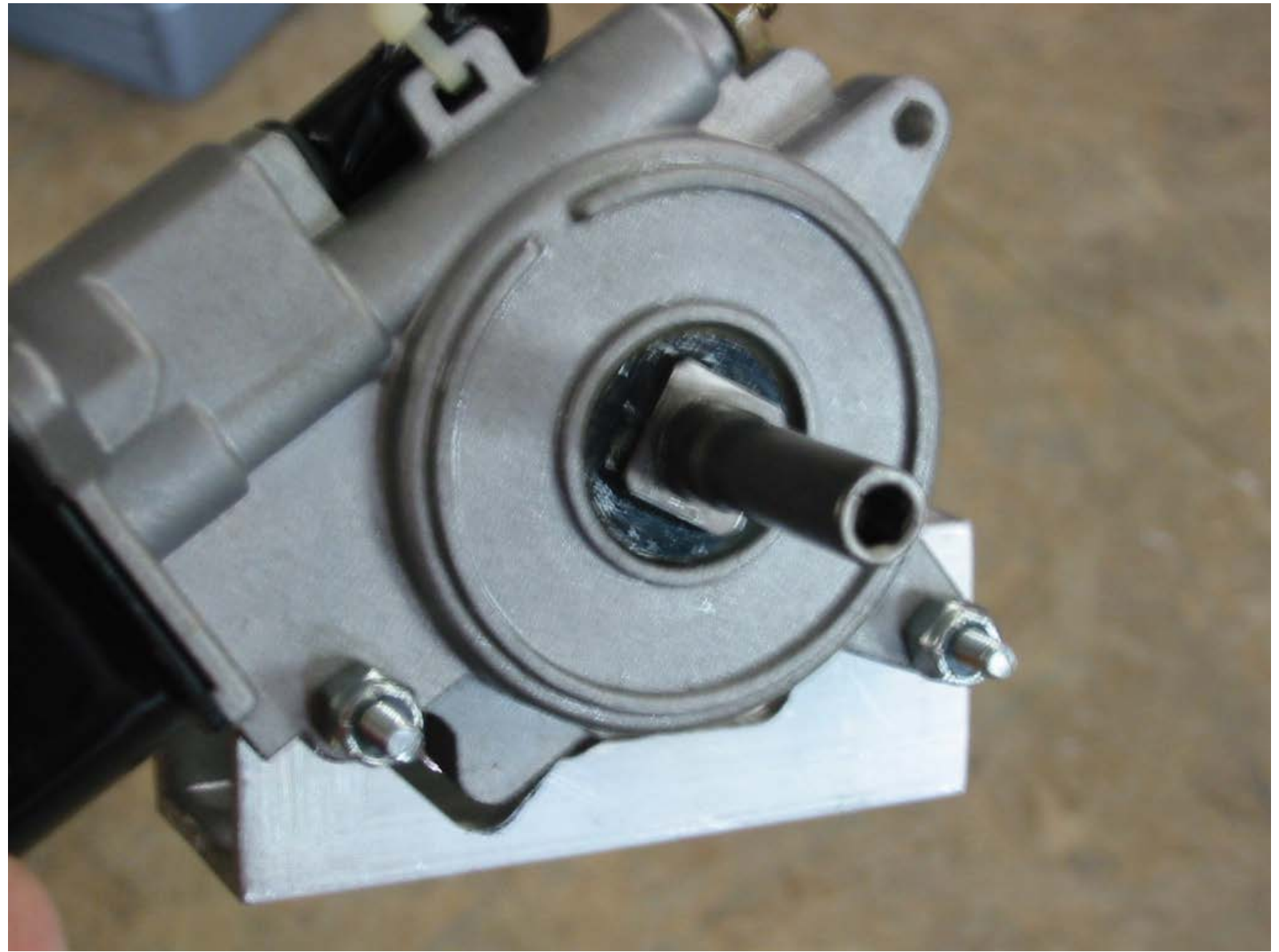






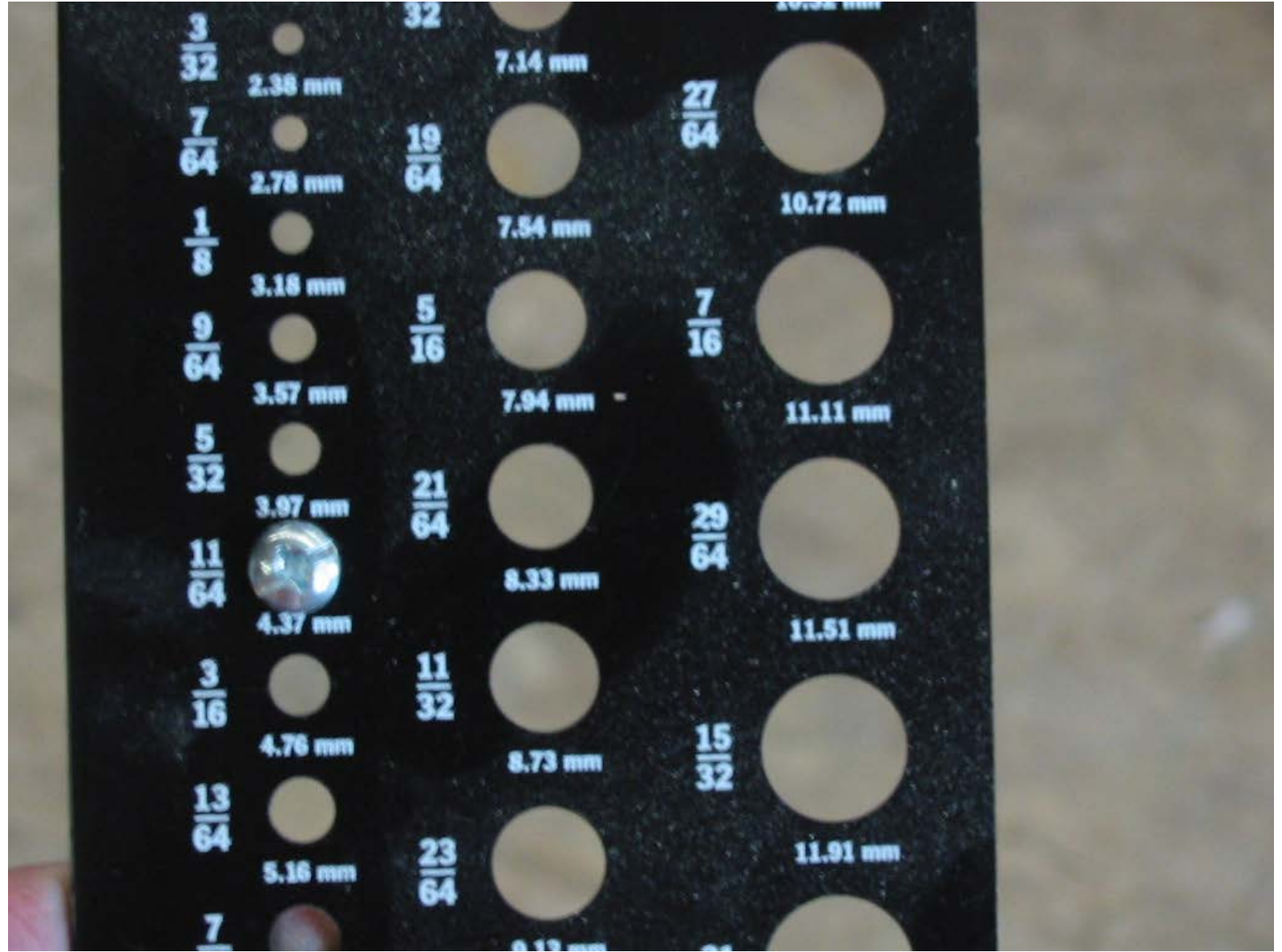


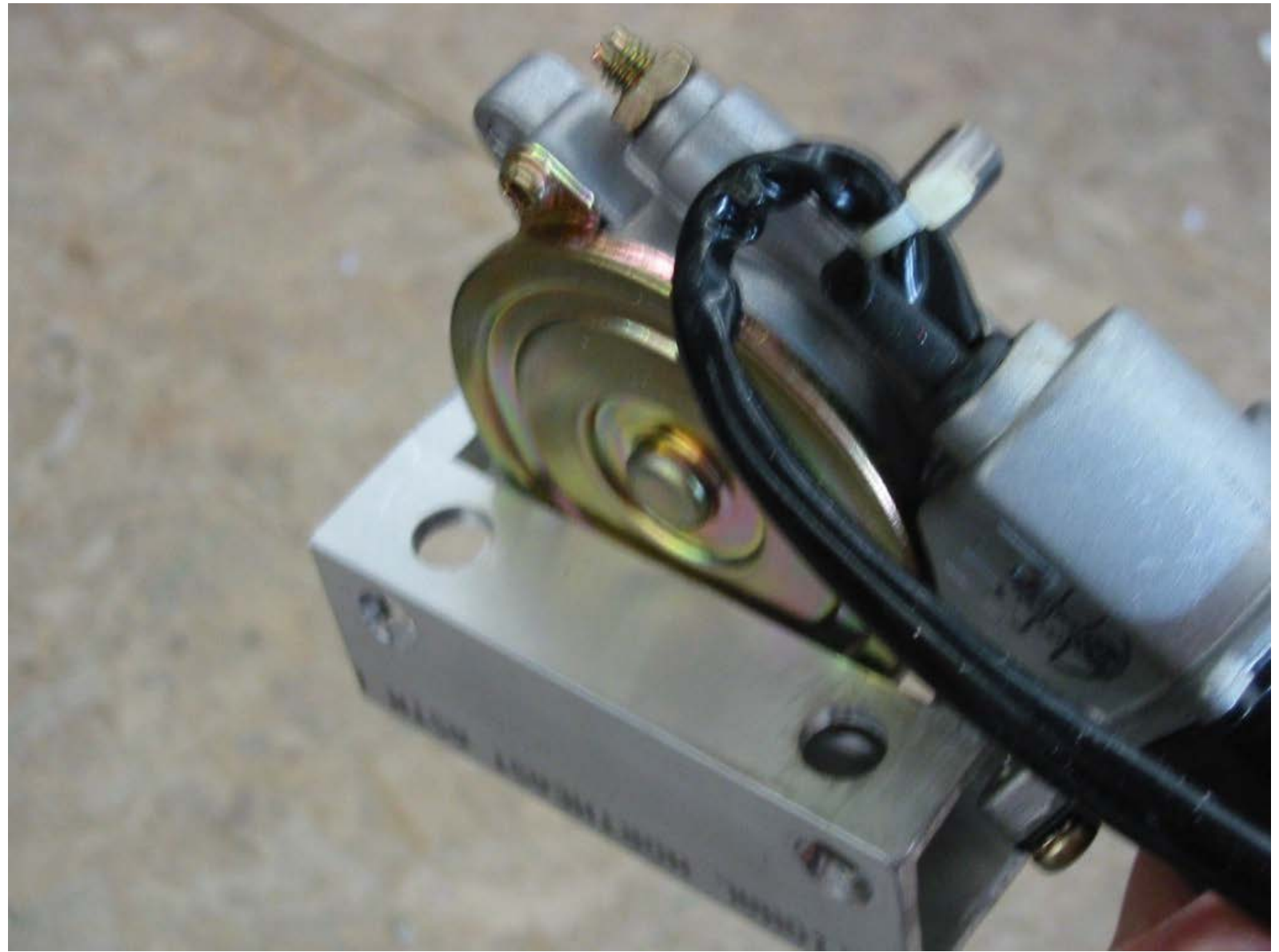


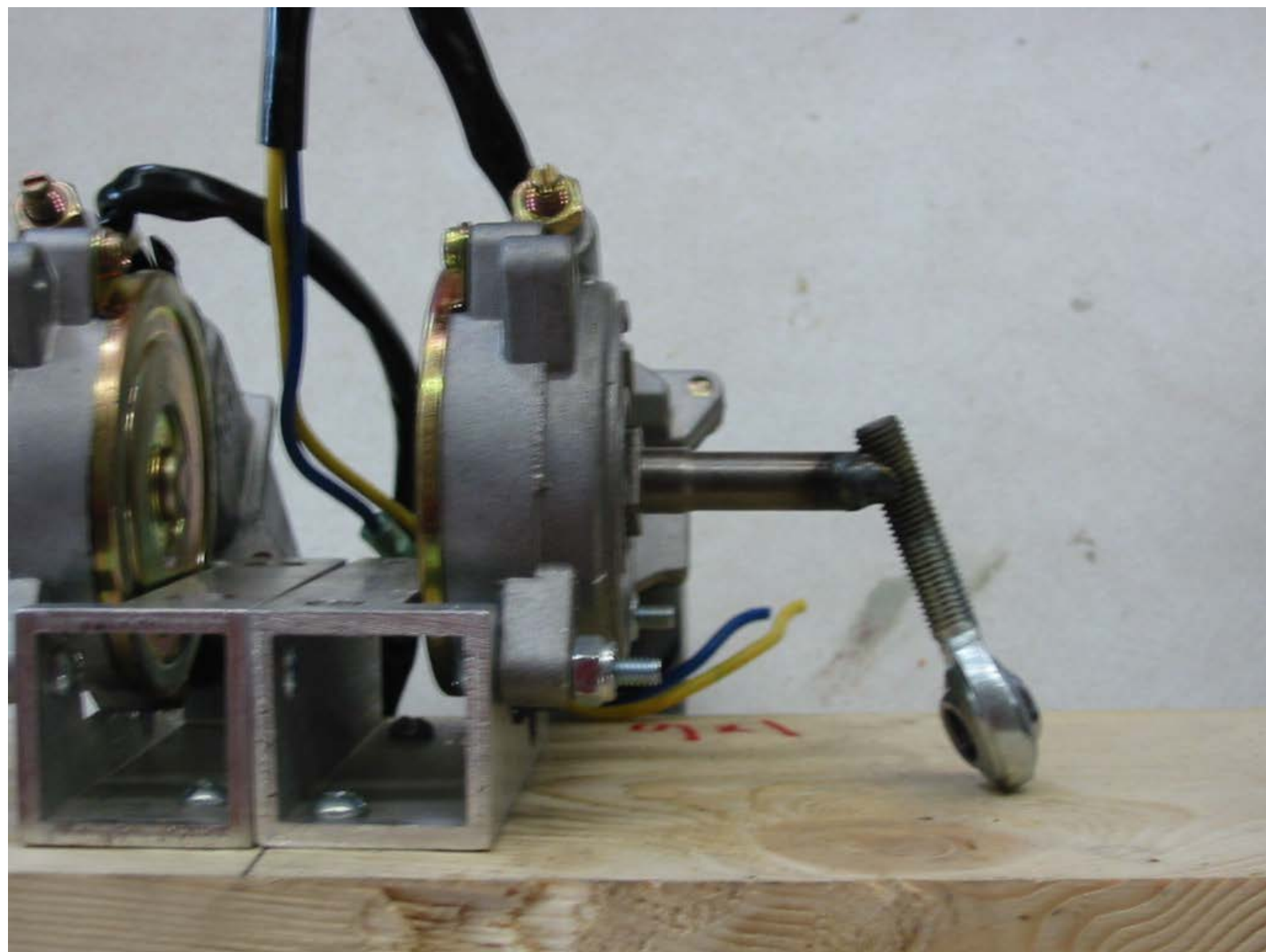




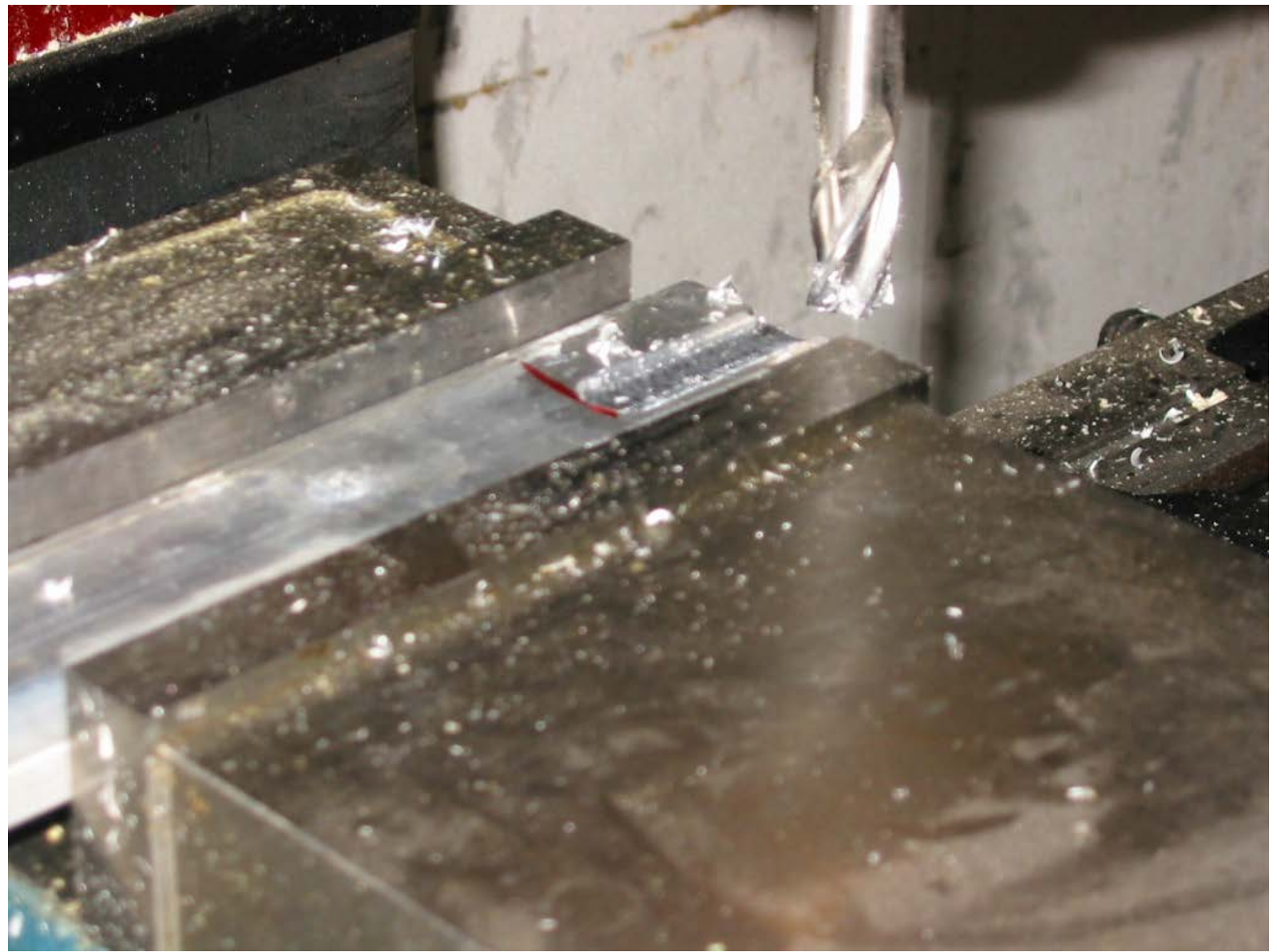




















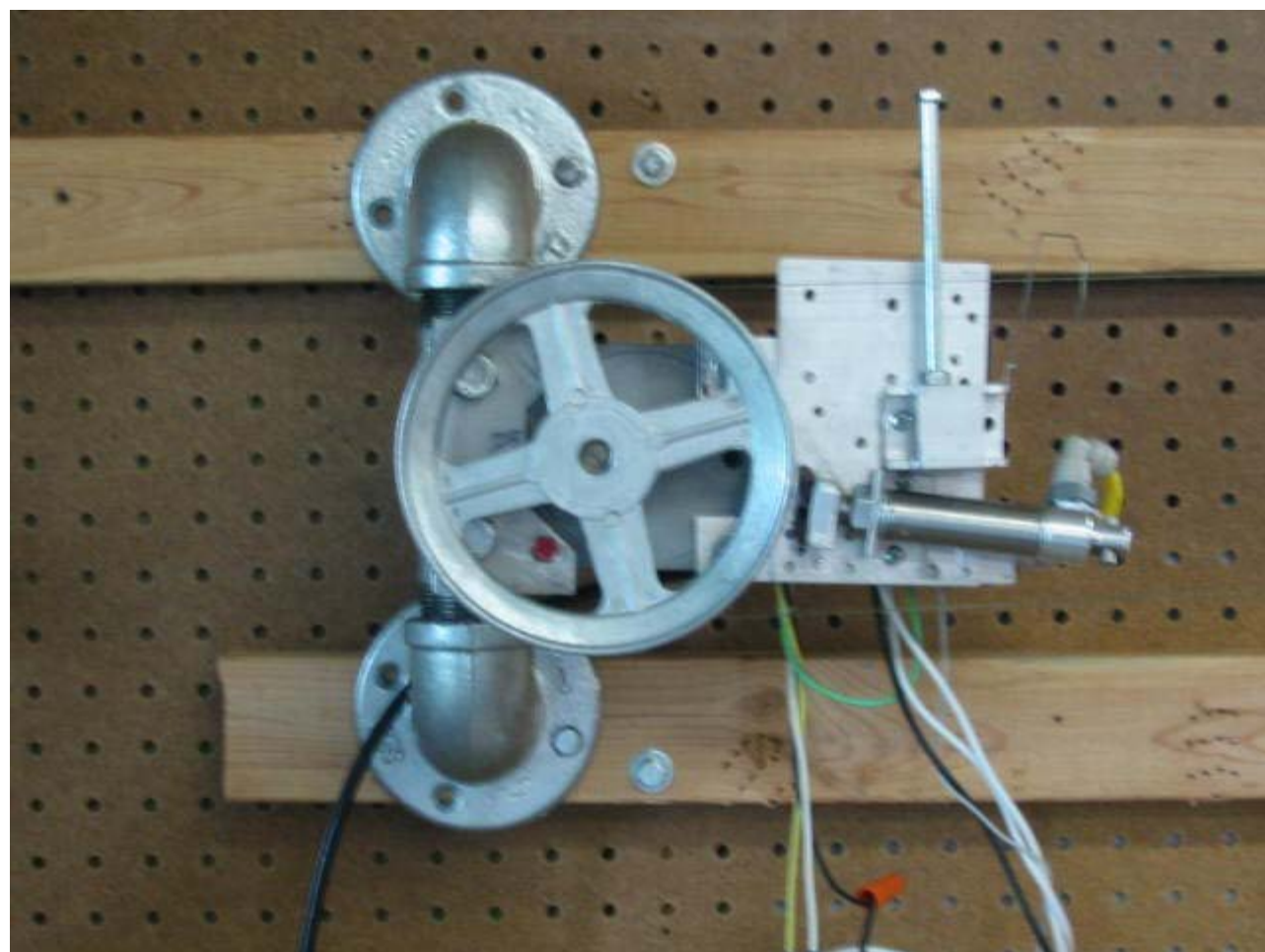
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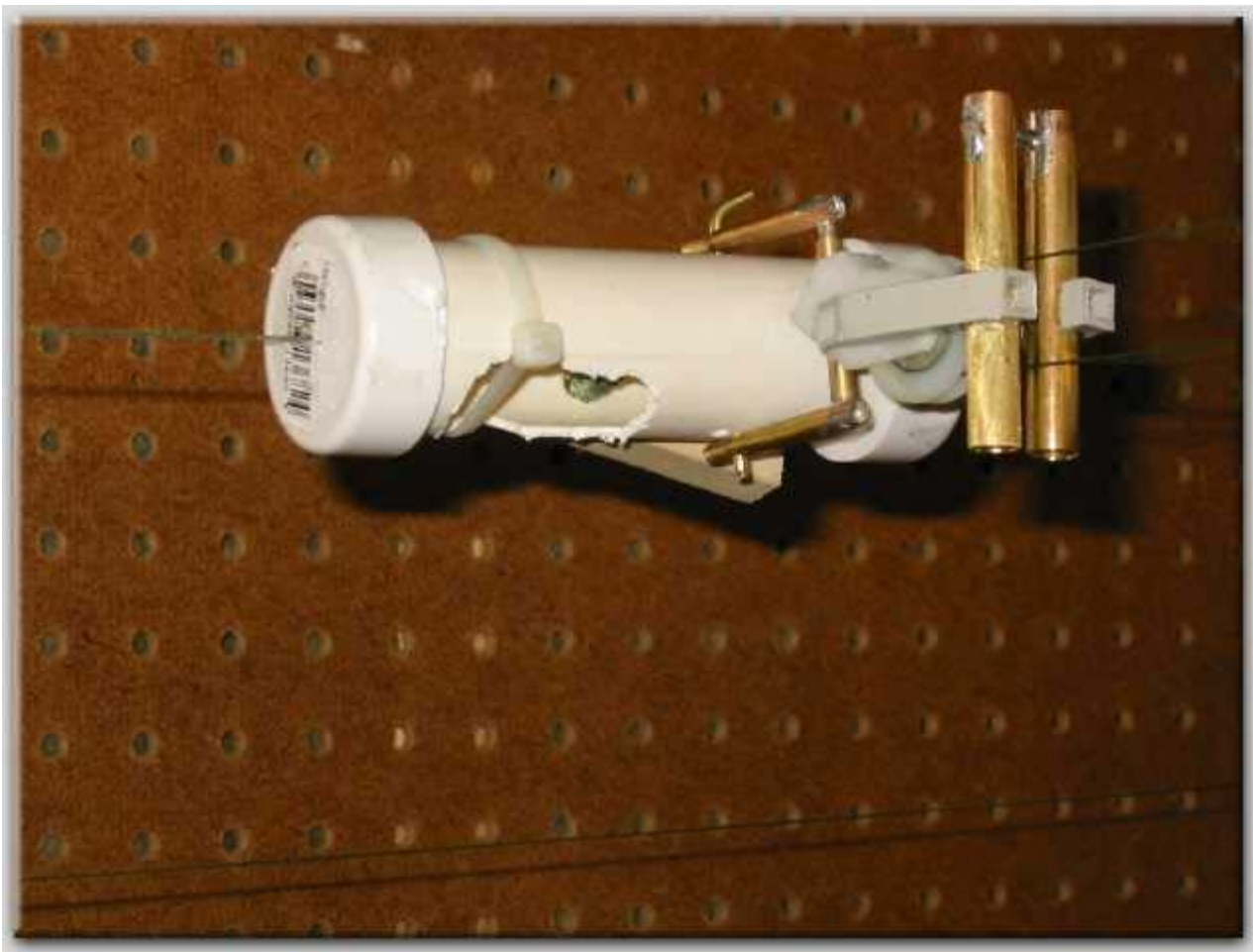


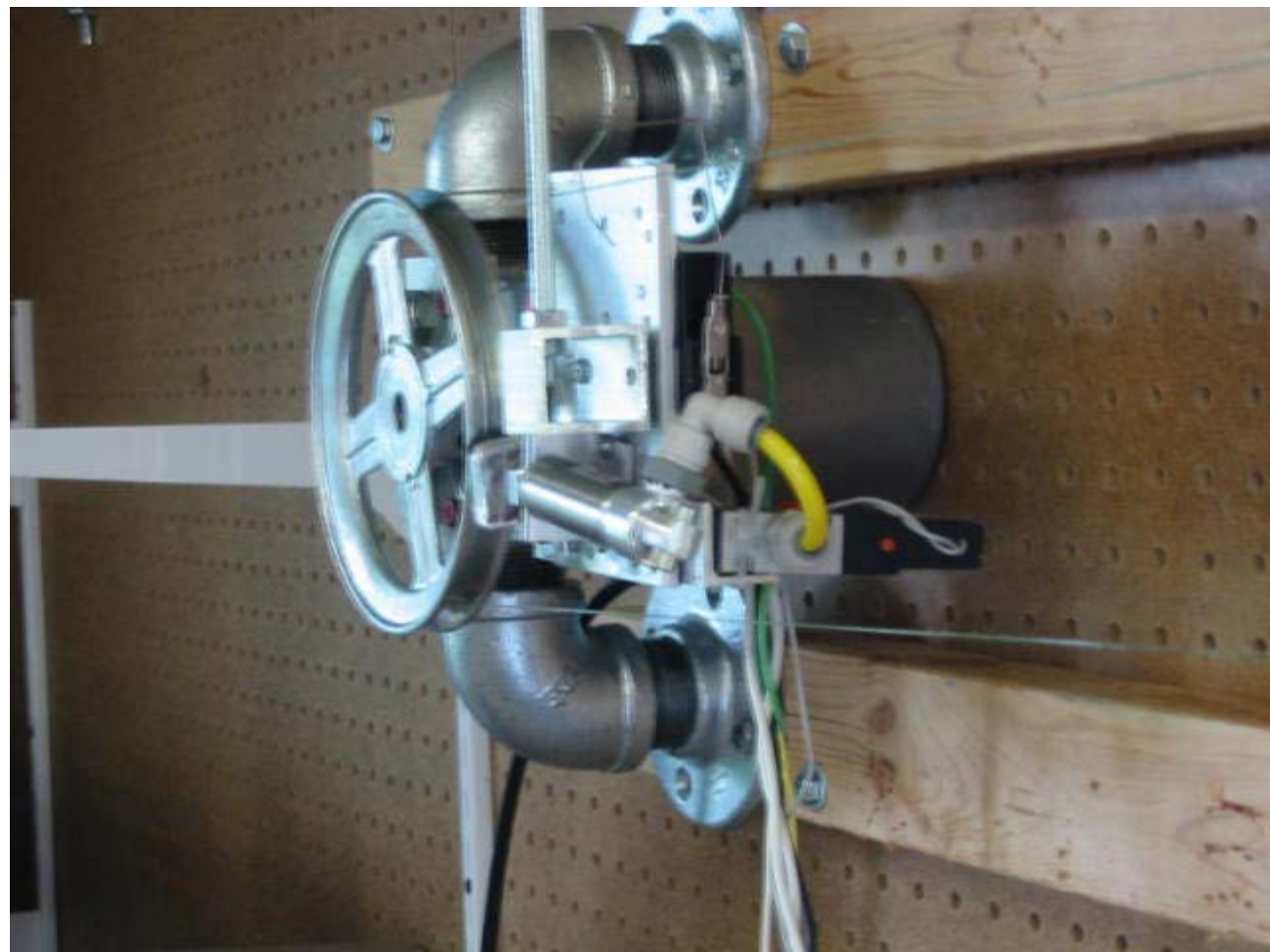
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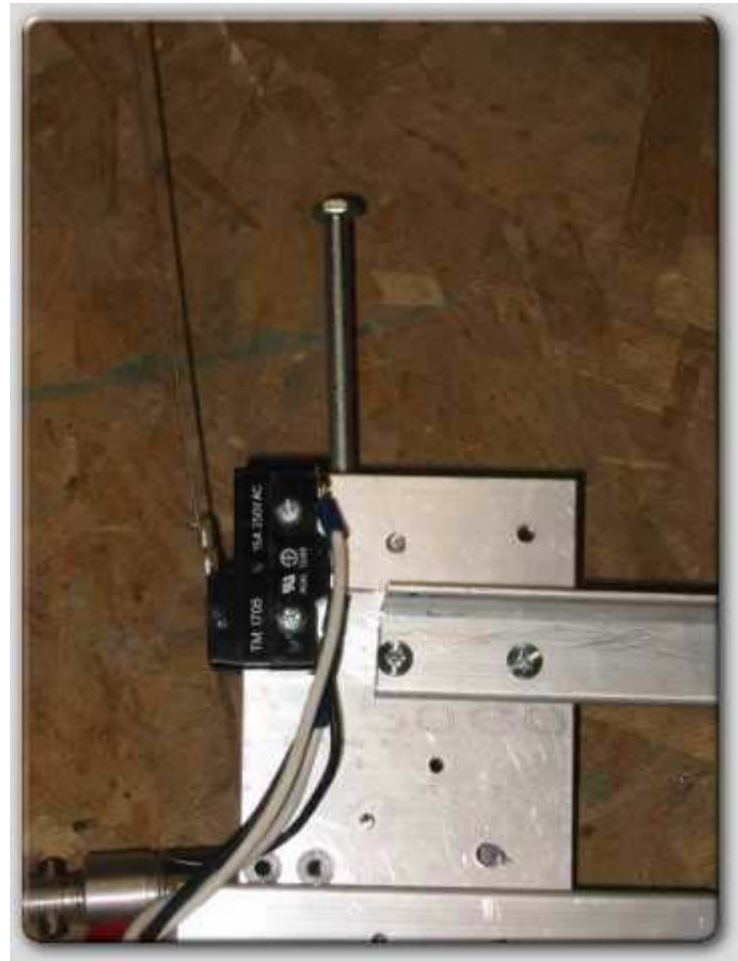








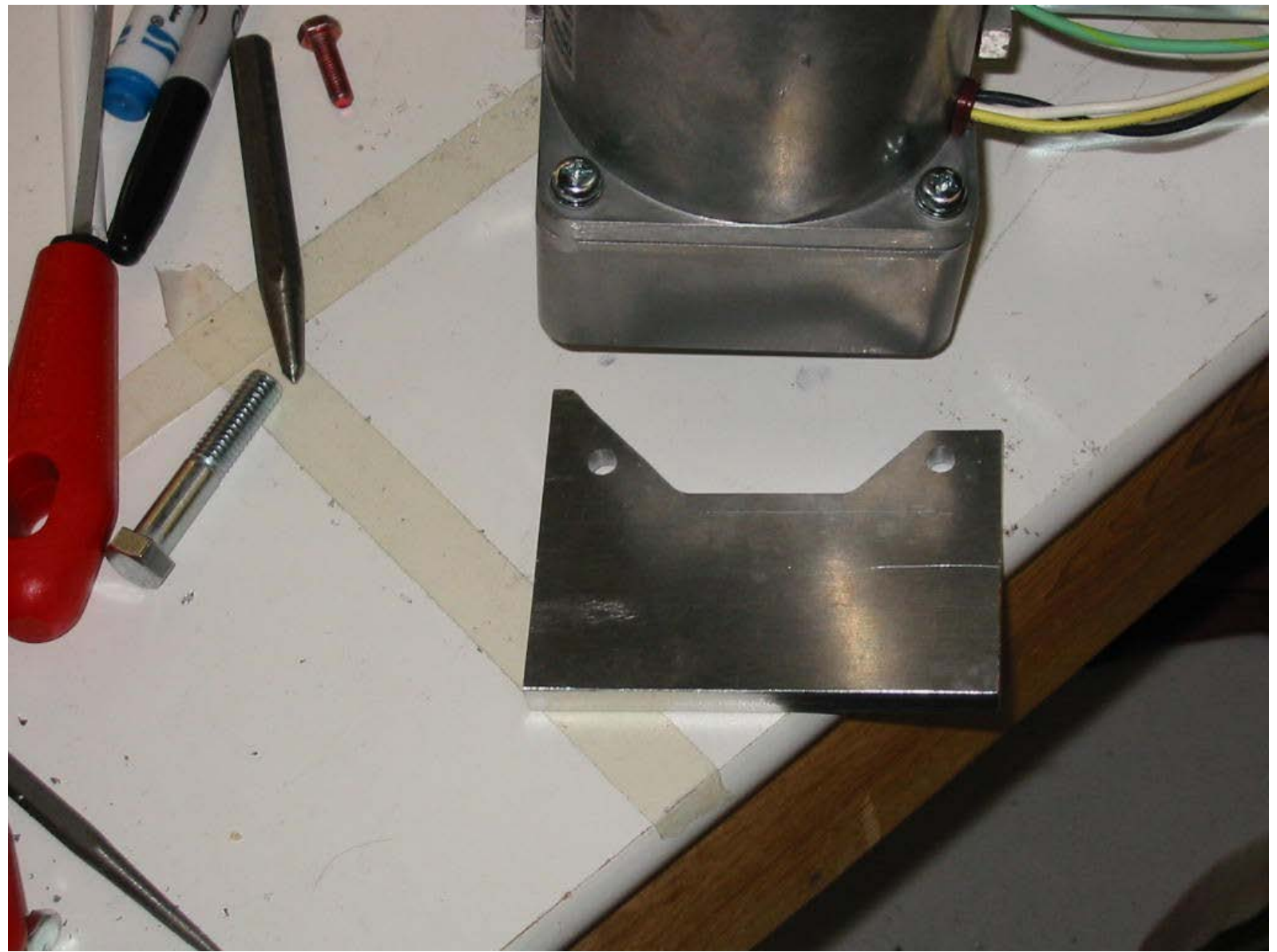


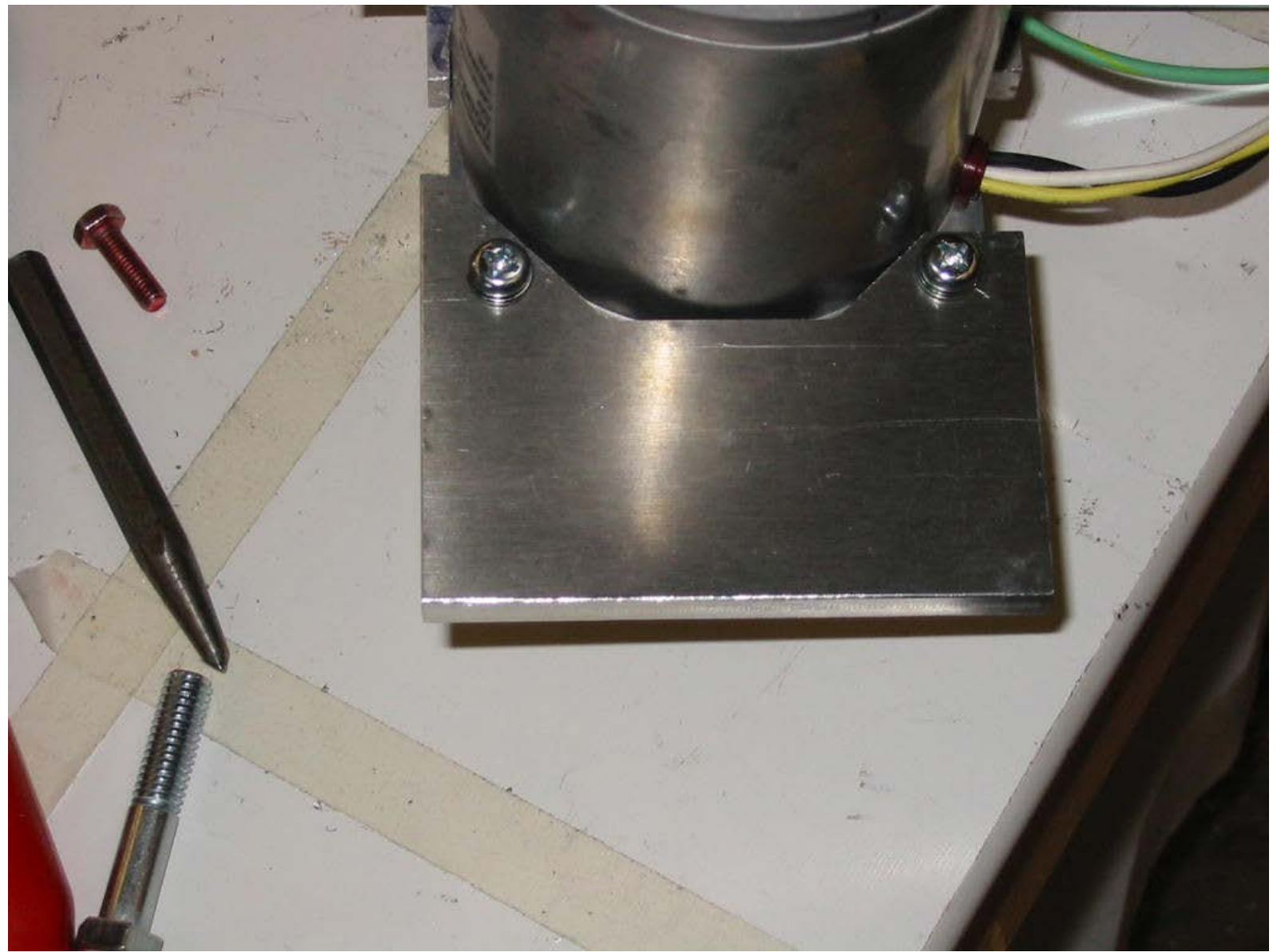




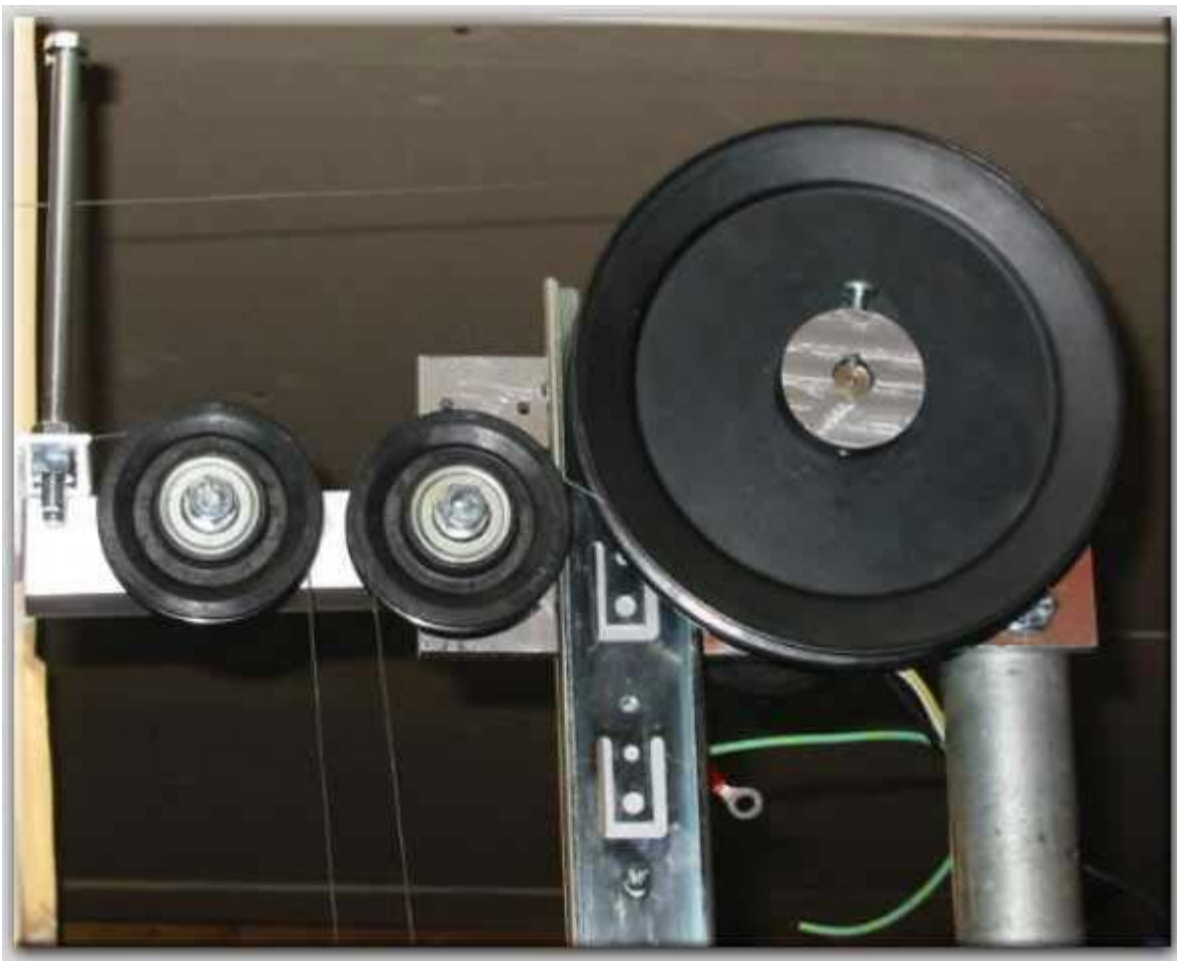


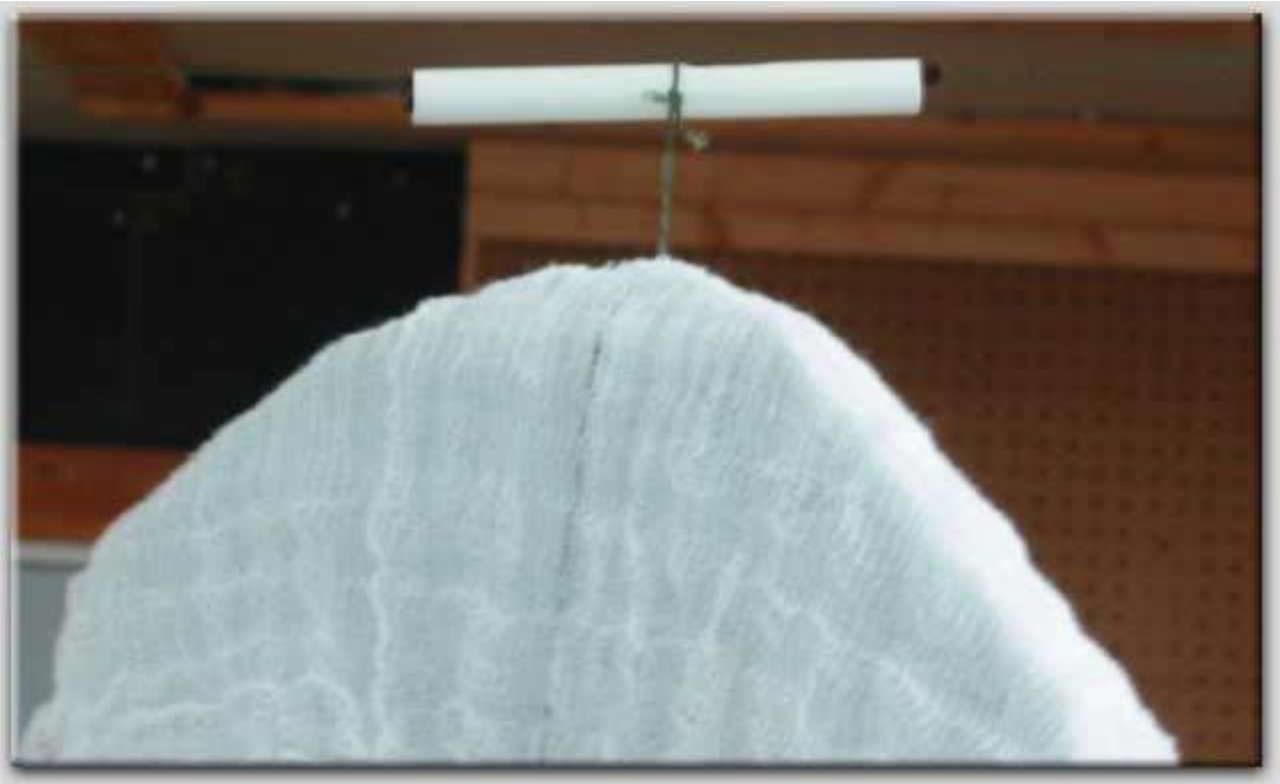
















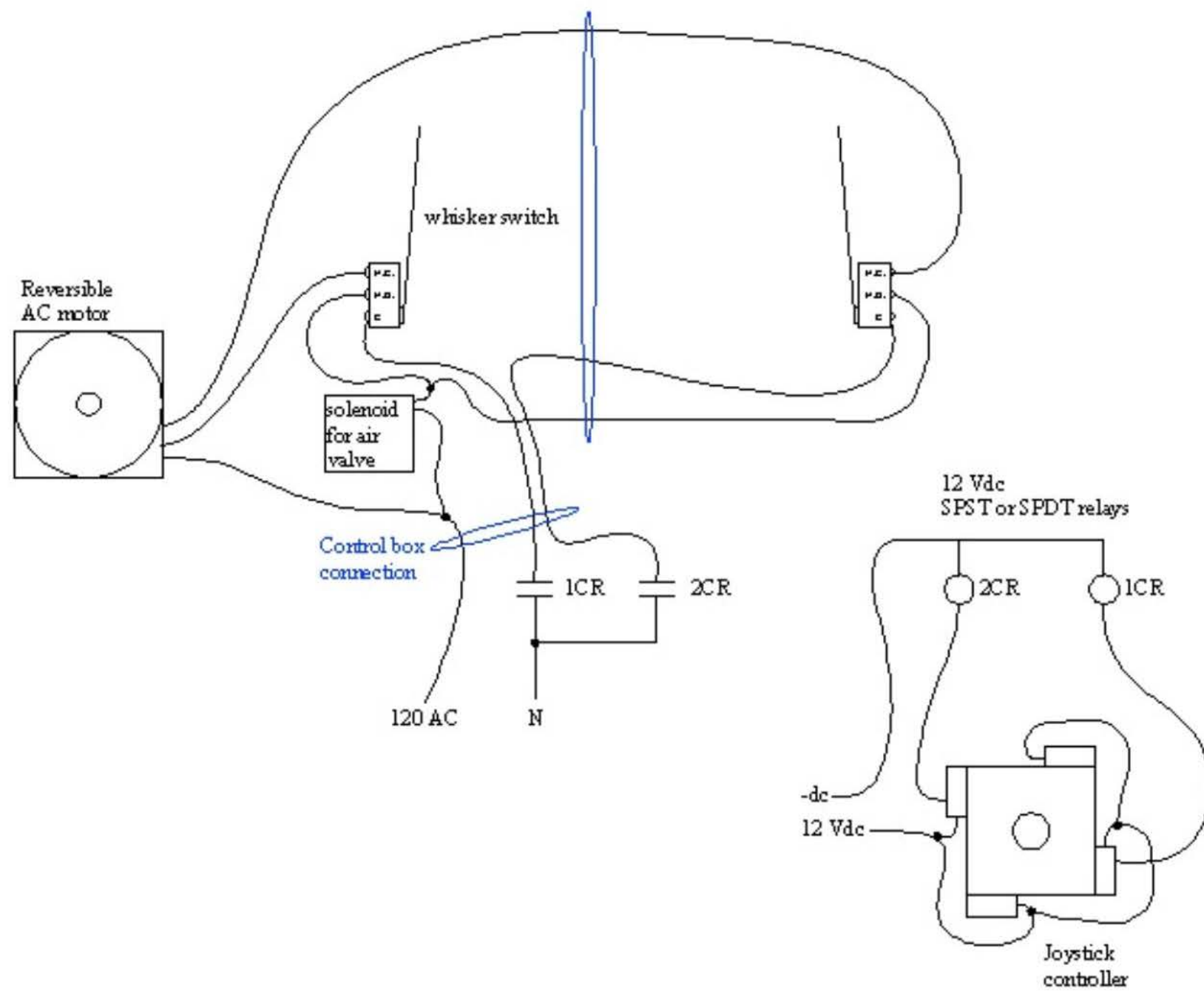












## Halloween 2006



## Halloween Video 2005 and some Yard Pics



[Click here to download the above video instead \(3.9meg file\)](#)













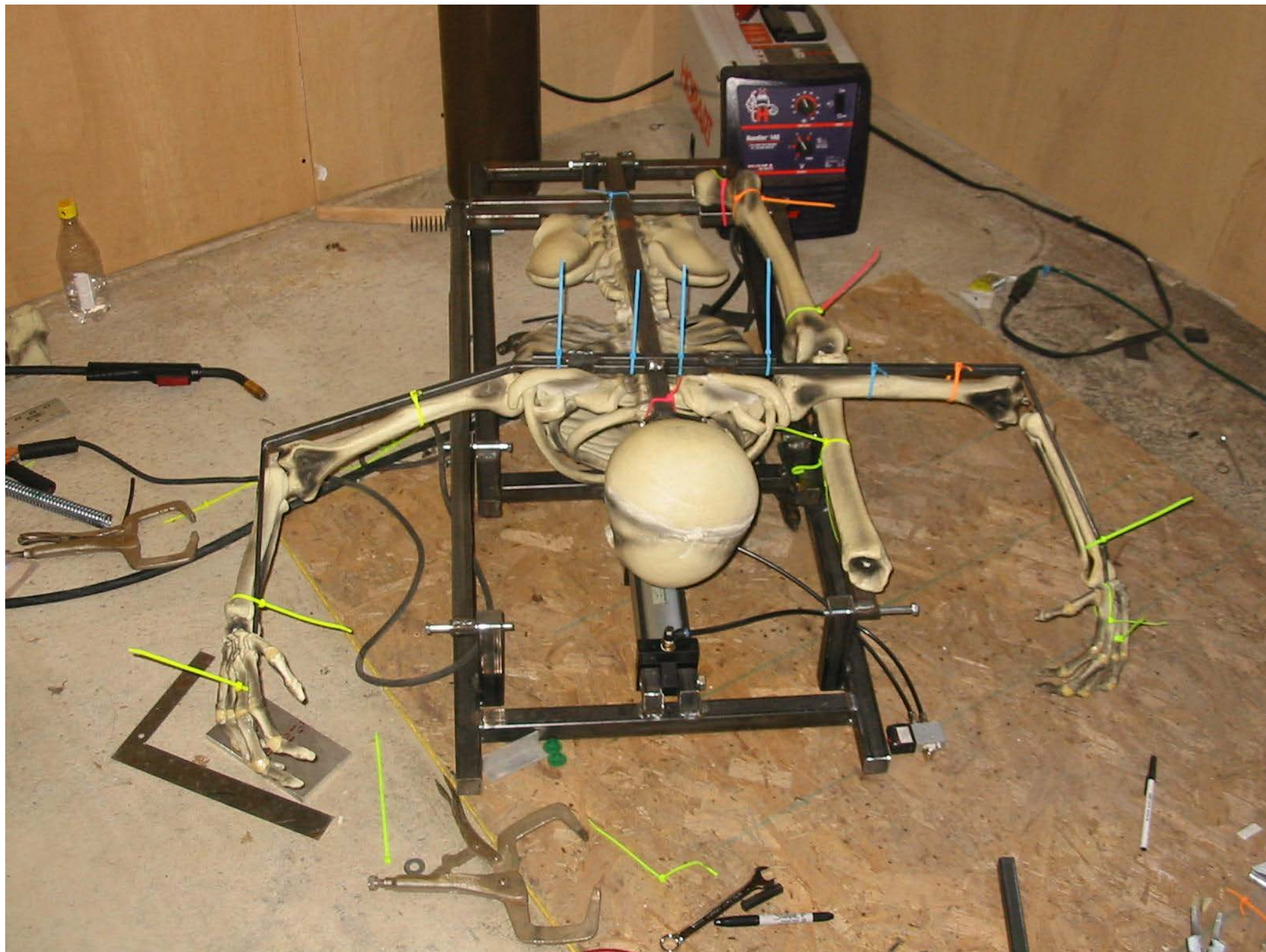








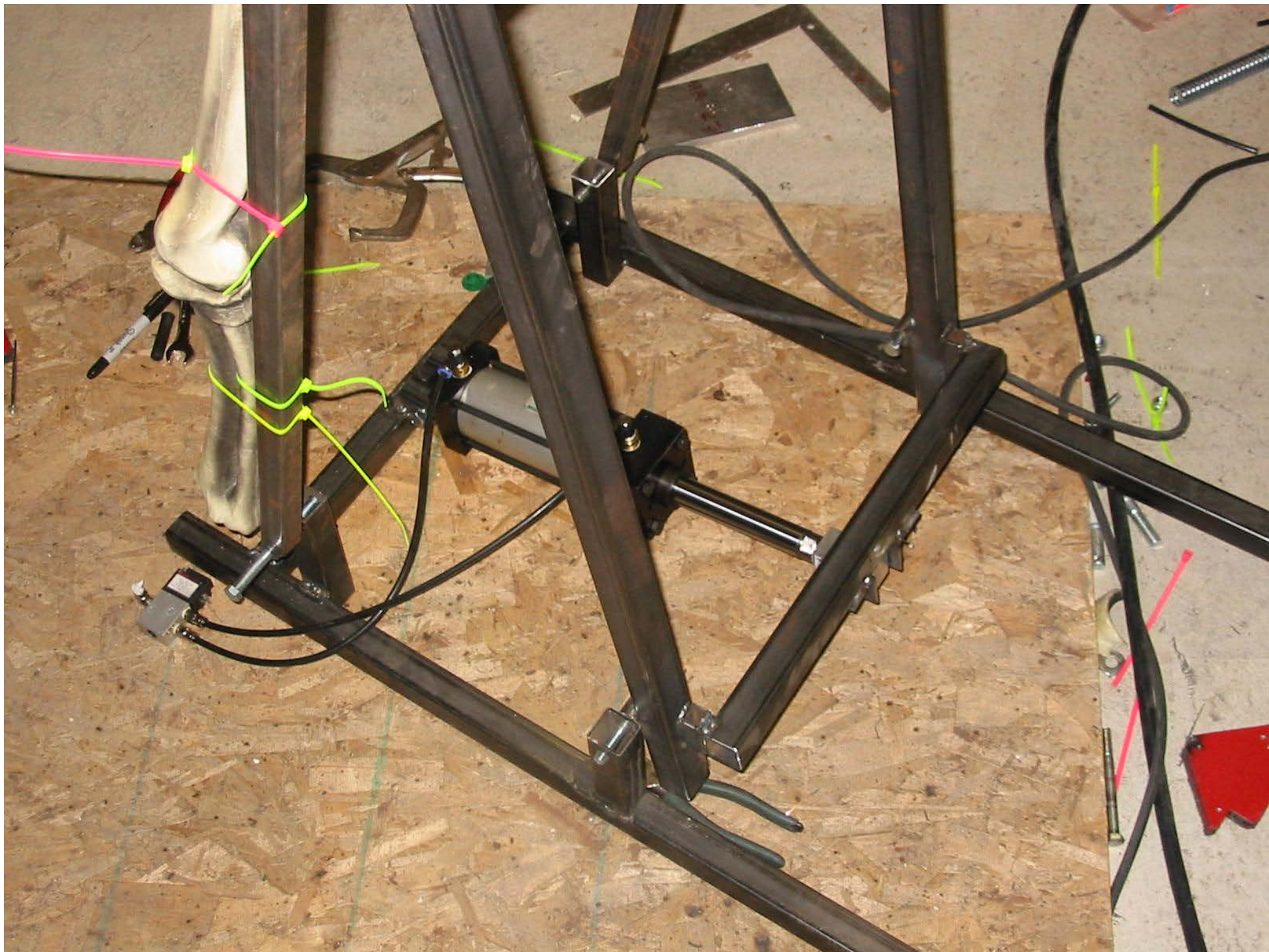




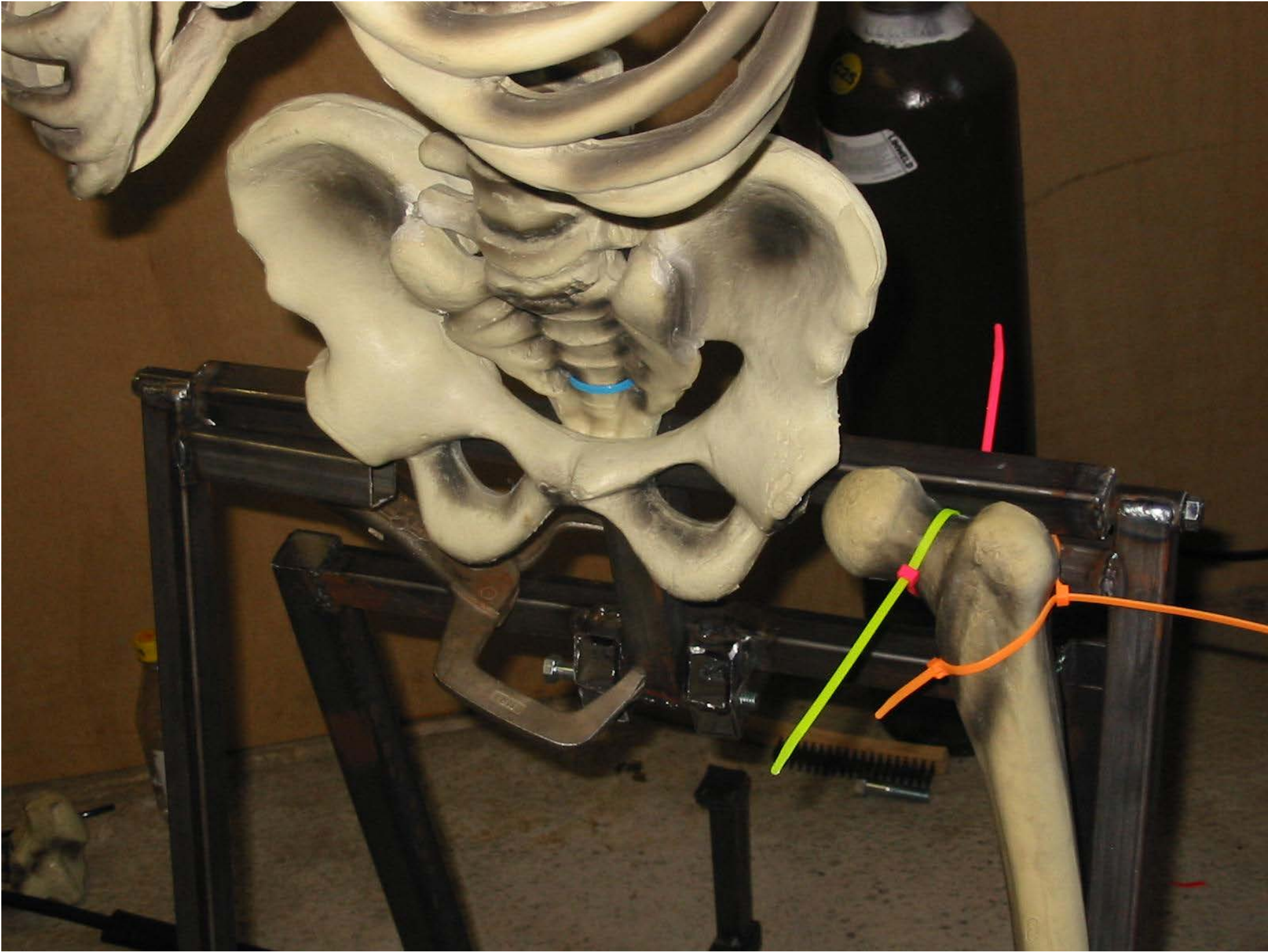












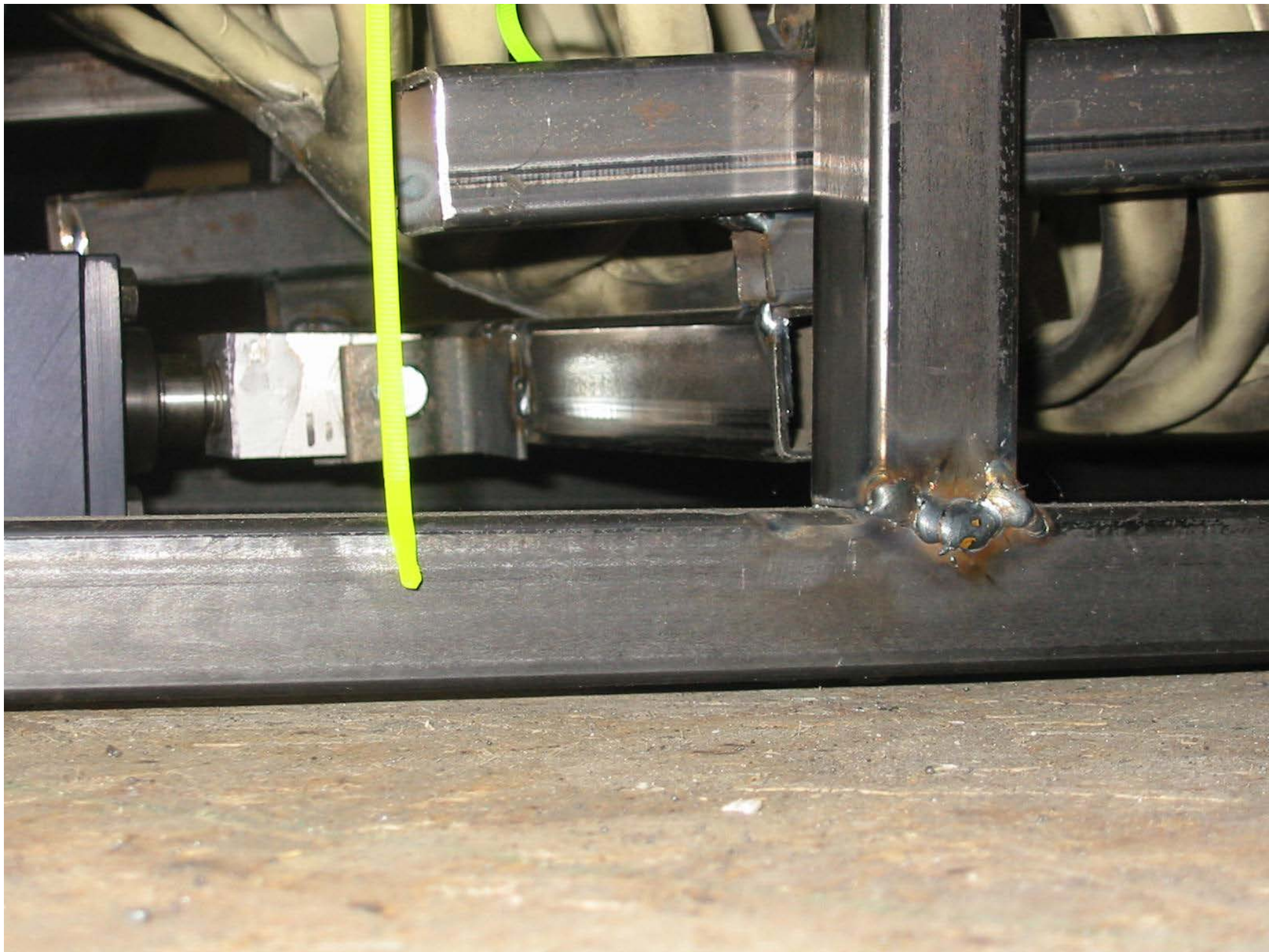




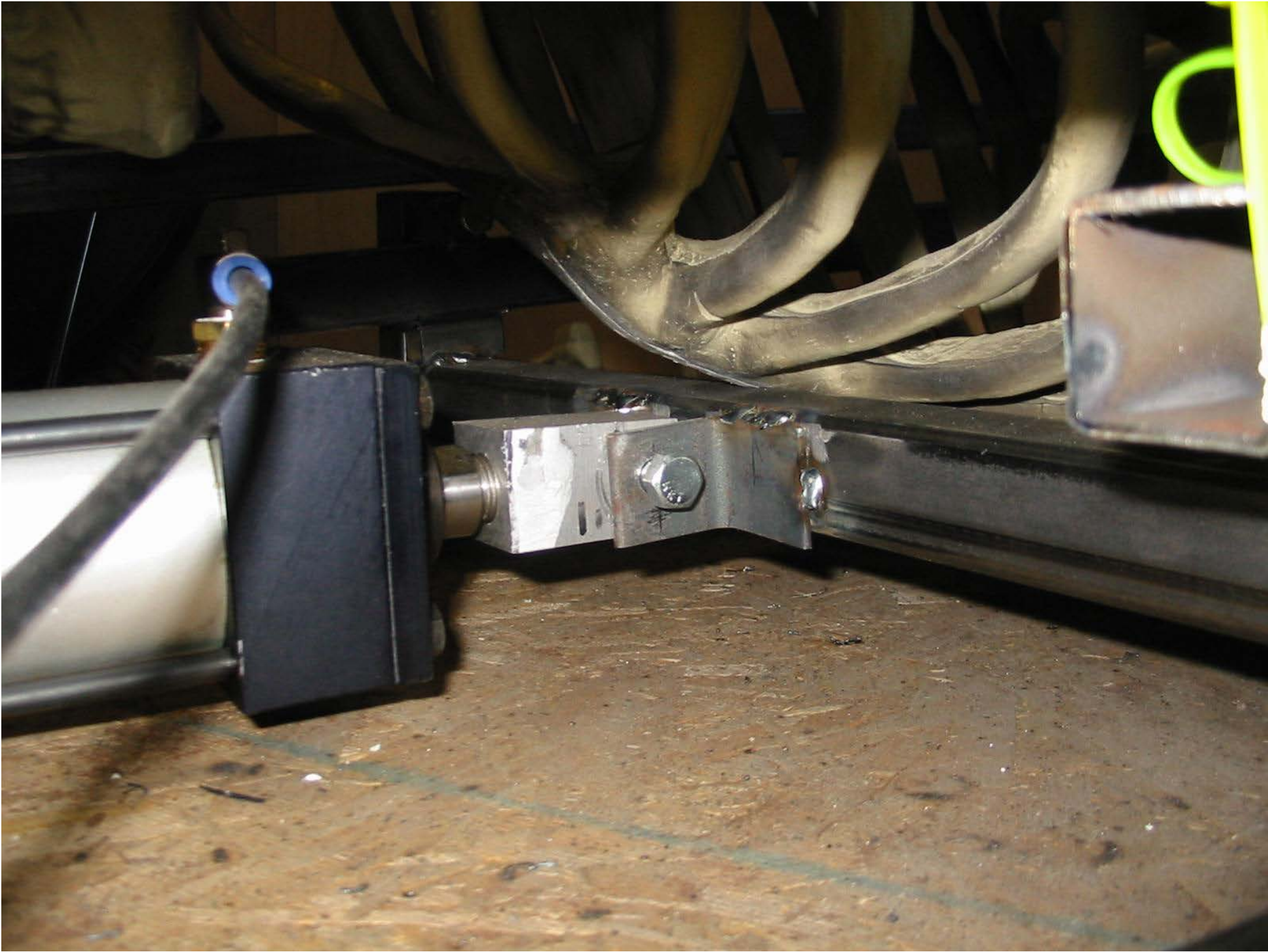




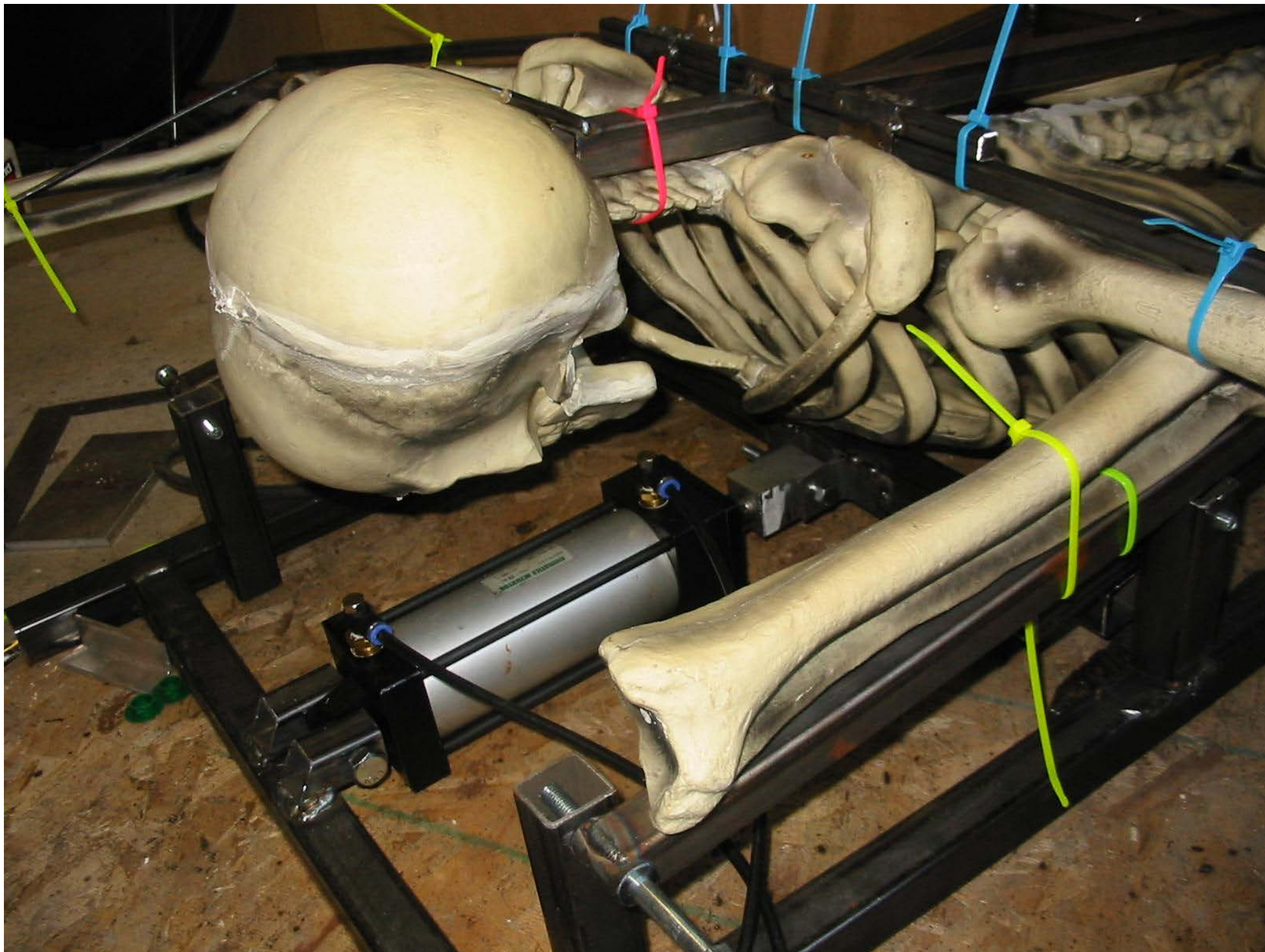












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### Page 2 - Front Bar Assemblies and Rotating Bar

The front bars and attachment pieces are made out of 1" square tubing either 16ga or 14ga material.

(2) Front bar tube length - 34-1/4" of 1" square tubing with 3/8" holes in 1/2" on both ends making them 33-1/4" apart.

(2) Attachment pieces - 4-1/4" of 1" square tubing. These are for zip tying the upper leg piece to.

(1) Rotating bar - 18-5/8" of 1" square tubing

(2) 3/8" washers

(2) 3/8" nuts

### Front Bar Assembly Pictures



The 4-1/4" attachment piece is welded 3/4" from the center of the 3/8" hole.

As I mentioned on the Intro page, I substituted 3/8" bushings where the 4 - 3/8" holes were on the front bars.

You can leave your bars with the 3/8" holes if you





wish to. As that makes building quicker.

Rotating Bar - this bar will be bolted to the front bars during final assembly and also the lifting bar will be welded to this rotating bar on Page 4.



A set of washer/nuts are added to the ends of the rotating bar. These pieces are shown below.

This allows a bolt to go thru the front bar upper hole and into this bar. The shoulder of the bolt will tighten up to this nut which allows the bolt and rotating bar to move freely later on.



The washer/nut assembly is started by threading a 3/8" nut (the one that will welded) onto a 3/8" bolt. Add the 3/8" washer and then another 3/8" nut (not welded). Center the bolt to the washer as best as you can, then weld the nut nearest the bolt to the washer. I make two good welds on opposite sides of the nut.

Let the parts cool and take them apart.



Weld a washer/nut assembly on each end of the rotating bar with the nut towards the center. I temporary add a bolt so none of the weld could splatter into the nut threads. After cooling, take the bolt out and smooth the weld across the washer surface with a grinder for assembly later.

Scroll back up to the top and head onto the next page.

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### Page 3 - Rear Bar Assembly

I recommend using 14ga for the 1-1/4" tubing pieces for strength.

(2) Side bar length - 28-1/2" of 1-1/4" square tubing with a single 3/8" hole centered 27-5/8" from one end of each piece.

(2) Spacer pieces - 2" of 1-1/4" square tubing

(1) Cross bar - 18-1/2" of 1-1/4" square tubing

(1) Cross bar - 16" of 1" square tubing

(2) Attachment pieces - 2-1/4" of 1" square tubing with a single 3/8" hole centered 1-3/4" from one end of each piece.

(2) pieces 7/8" long of 1" square tubing

### Rear Bar Assembly Pictures



This is the hardest piece to make. Get this done, and the rest of the structure is easy.

Lay the two 28-1/2" pieces down with the 3/8" hole as shown.

Add the 16" - 1" square piece to the opposite end of the drilled holes.

The 16" piece is in between the 28-1/2" pieces and at the very end.

There will be a 1/4" gap above the 1" tubing at each end since it is butted up against the 1-1/4" side frame tube.

Square these pieces up and weld them together.

The attachment pieces are located at the inside middle of the 16" piece

with a 1-1/8" spacing between them and with their 3/8" drilled hole upward as shown in the picture to the left.

Flip the piece over and add the two spacer pieces and cross piece on the other end as shown in the picture to the left. These pieces are all lined up at the end of the 28-1/2" pieces.

See the next picture below for better orientation of the assembly.





This is shown in the proper orientation when we start putting things together later.

Air cylinder connection - Below shows the proper placement for the clevis connection for the 5" stroke air cylinder. You can add this later if need be for positioning.



The important part here is the hole is 1" down from the top of the cross tube and it is 1" out from it. With the 5" stroke cylinder, this placement will lift and rotate the rear bar to the correct standing position. I used 2 pieces of 1-1/2" angle on my own set-up.



Add this piece on each side as shown. This block is to keep the 4-bar linkage from over-centering when the prop is retracted and someone should try and push the prop down further.



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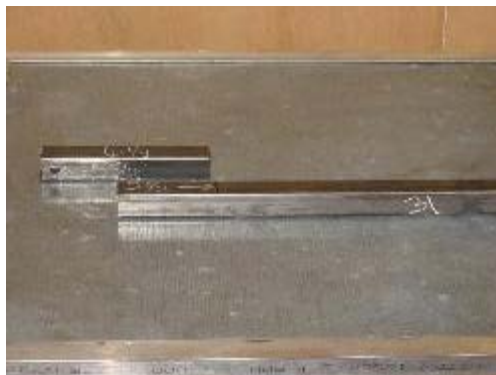
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## Page 4 - Lifting Bar and its Assembly

(1) Lifting bar - 31" of 1" square tubing

(1) Attachment piece - 6-1/4" of 1" square tubing with a single 3/8" hole centered 5-3/4" from one end.

### Lifting Bar Assembly Pictures



The attachment piece goes on 3-1/2" in from one end of the 31" piece. Weld these pieces together, but not on the end as we need to add another piece onto this assembly.

Again, you can see I substituted the 3/8" bushing again for the standard hole.

Here we center the rotating bar piece we made





earlier and butt it to the end of the 6-1/4" tube.  
Square up these pieces and weld them together.



This is the right side up view when it gets assembled  
later.

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## Page 5 - Base Frame

(2) Side rails - 38" of 1-1/4" square tubing

(1) Cross piece - 19" of 1-1/4" square tubing

(1) Cross piece - 19" of 1" square tubing

(2) Vertical posts - 4-1/2" of 1-1/4" square tubing with a 3/8" hole centered at 4"

(2) Vertical posts - 5-3/4" of 1-1/4" square tubing with a 3/8" hole centered at 5-1/4"

(2) Cylinder mounts - 3" of 1" square tubing

(2) Rear stop bars - 6-1/4" of 1" square tubing

Some 1/8" x 1" flat strip

## Base Frame Assembly Pictures



The 4-1/2 and 5-3/4" vertical tubes are placed at the 20" and 33-5/16" marks on the 38" side rail.

Meaning the 4-1/2" tube is between 20 and 21-1/4" and the 5-3/4" tube is between 33-5/16 and 34-9/16".

See the following pictures for proper placement as the 4-1/2" is mounted on top of the 38" piece and the 5-3/4" tube is mounted on the inside of the 38" pieces.





This is the front side of the base frame.

My front 1-1/4" cross tube was placed 1-1/4" in front of the vertical post. This piece will have air cylinder mounts added onto it and should be far enough away for mounting most air cylinders as shown in the pneumatics page.

Make sure to square up the pieces before welding.

I used a 1" piece for the rear cross member. You could use 1-1/4" stock if you wanted to. It was placed 1-1/2" in from the end.



Shown above is the rear stop/support piece for the front legs. It was placed in 1/4" and a piece of 1/8" strip added on top of it.

I also welded on ends of the side rails to keep moisture out since they will on the ground and water could pool inside otherwise.



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## Page 6 - Putting all the pieces together

Cylinder mounts - 3" of 1" square tubing (drill hole as required for cylinder end)

3/8" bolts at lengths 2-1/2", 3-1/2", 4-1/2"

3/8" washers

## Assembly Pictures



The 2-1/2" bolts go into the rotating bar. You may need a washer or two to take out any excess play.

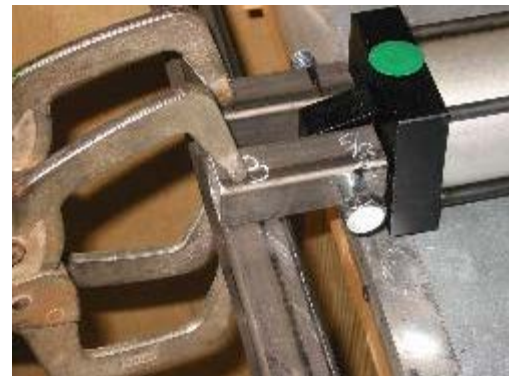


Here is a homemade clevis. I used the proper sized nut that fits the air cylinder threads and then welded on a couple of washers.

Use whatever works best for you.



Here is my air cylinder with its clevis being bolted to the rear bar assembly.



Before welding the rear pivot of the air cylinder, make sure the 4-bar is all put together as shown below with the front arms resting on the stop pieces and the 5" stroke air cylinder retracted all the way.



Manually test the mechanism to see if it works and moves properly.

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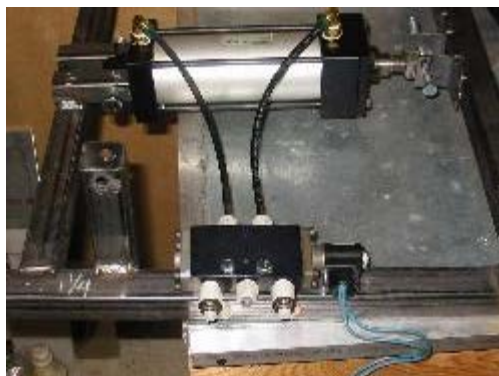
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## Page 7 - Pneumatics and the skeleton

### Assembly Pictures

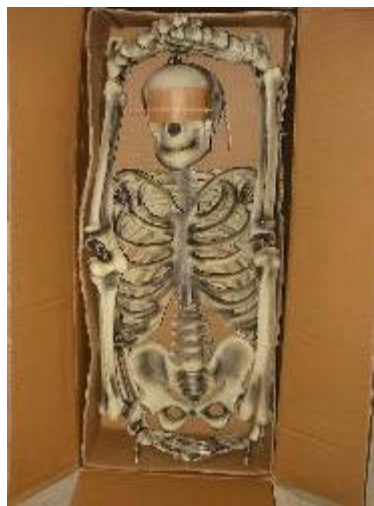


I used a couple of knurled rivet nuts in the side rail to bolt down the air valve.

The air valve I used was a 5 way 2 position version with a 120 vac coil. The 5 way valve allows to have 2 separate air controls on the exhaust ports to control the lifting speed and the lowering speed. With the skeleton added, I was running the air pressure to the valve at 50-60 psi. The air cylinder used is a 2-1/2" bore x 5" stroke.

My favorite skeleton to use, the Menards Hardware store 78" foam skeleton.





As marked here, some vertebrae bumps, a little bit of the tail bone and the rear side of the hip sockets need trimmed to make things fit flatter, better, and to relieve interference.



I used a 12-1/2" piece of 1/2" tubing with 1/8" strips to make a way to remove the skeleton arms for storage and if I didn't like a pose, I could easily just redo the arm bracket.

2 - 4" pieces of 1/4" round were welded in a V fashion to support the head from thrashing off.

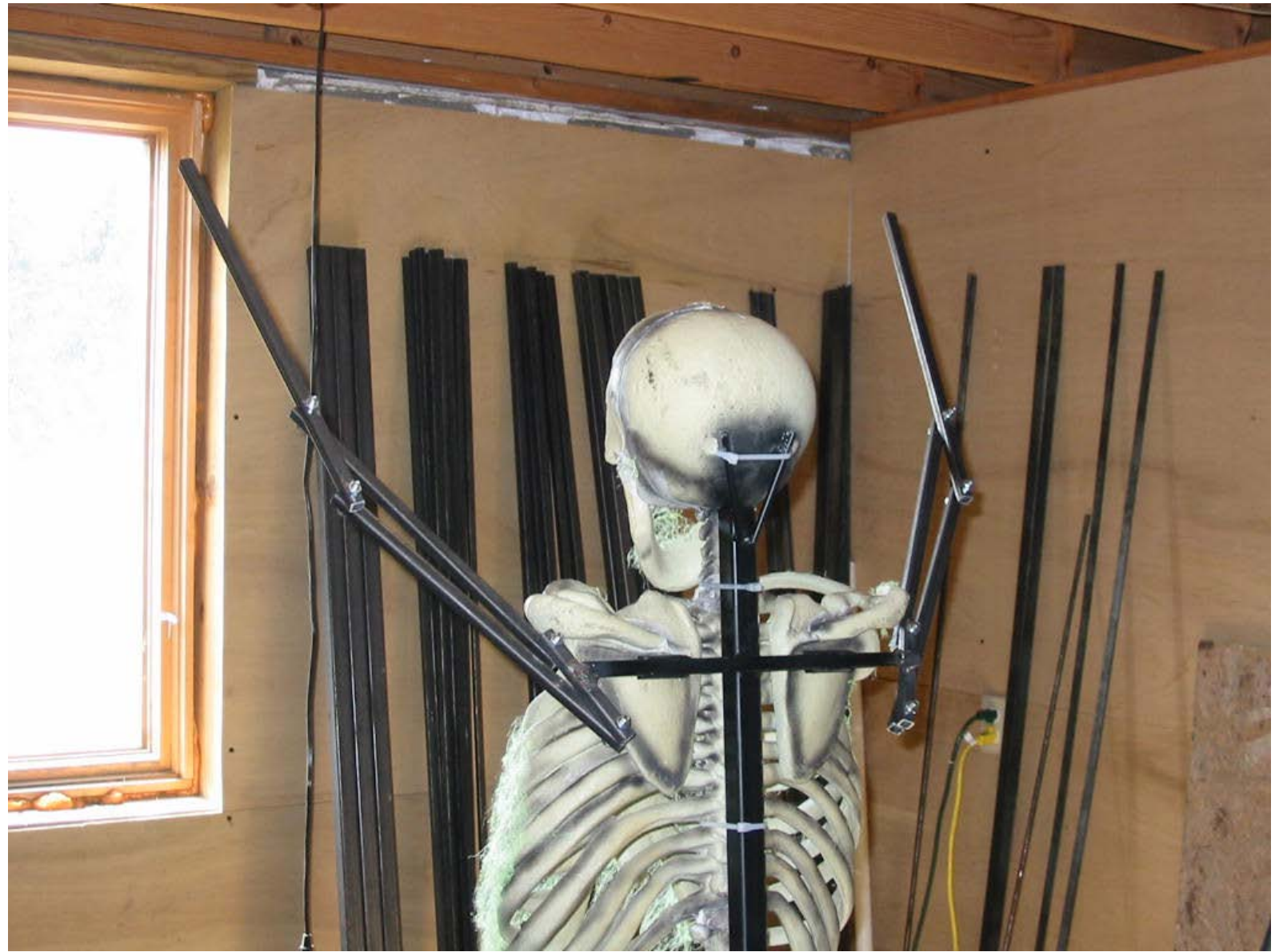
A long zip goes around the V piece thru a couple drilled holes in the back of the head and thru a couple holes drilled in the back of the mouth area for solid fastening.









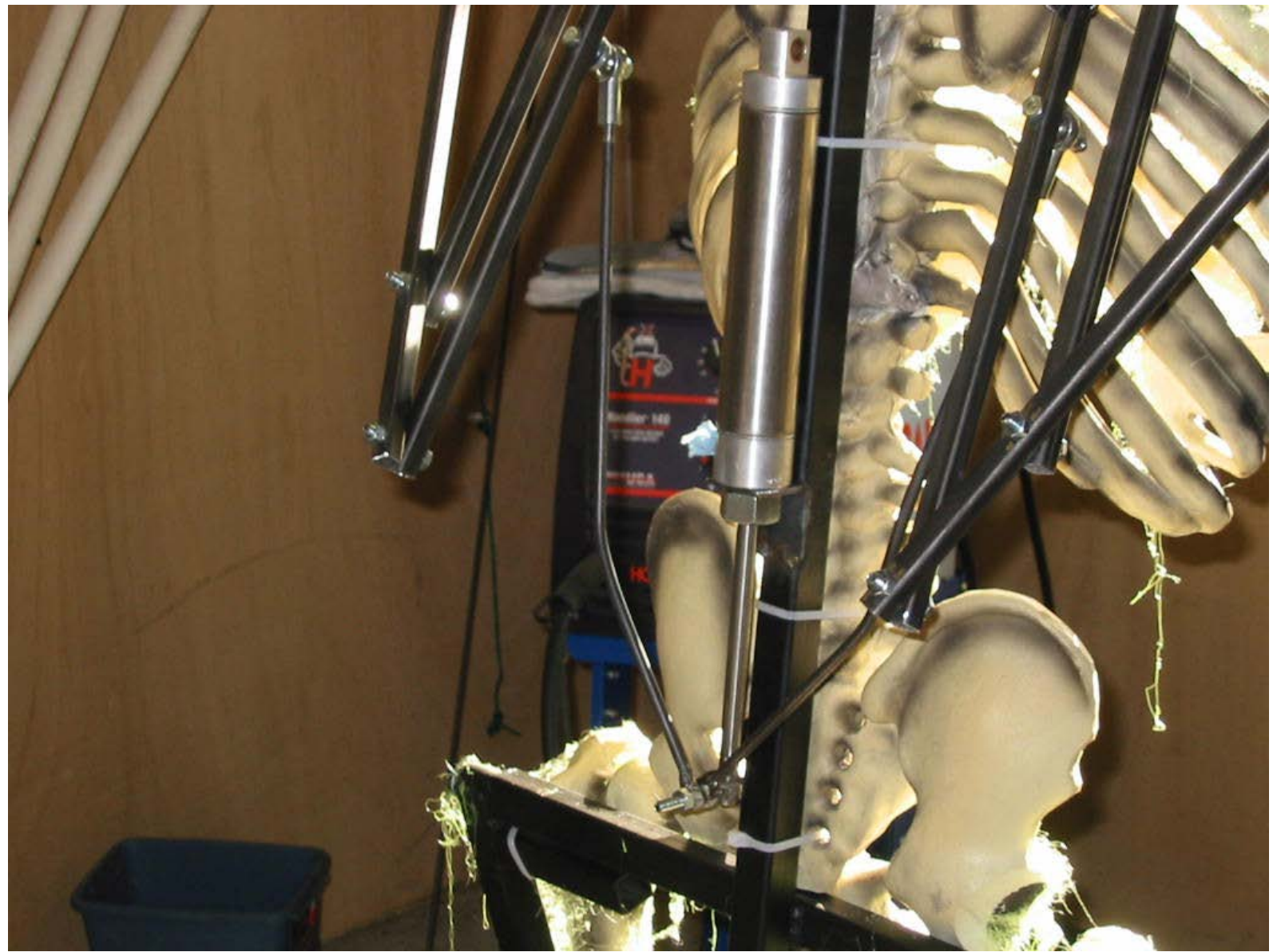








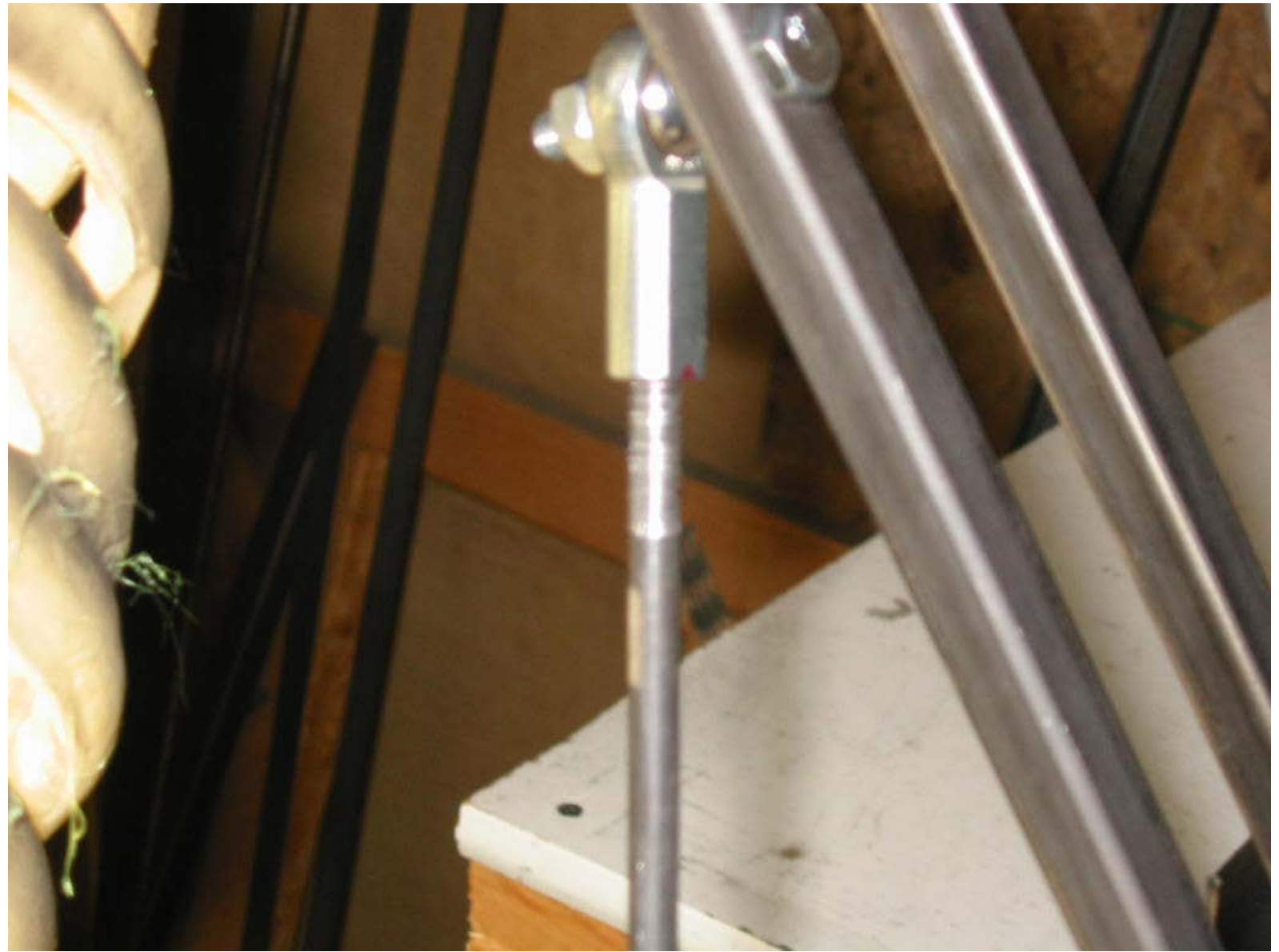


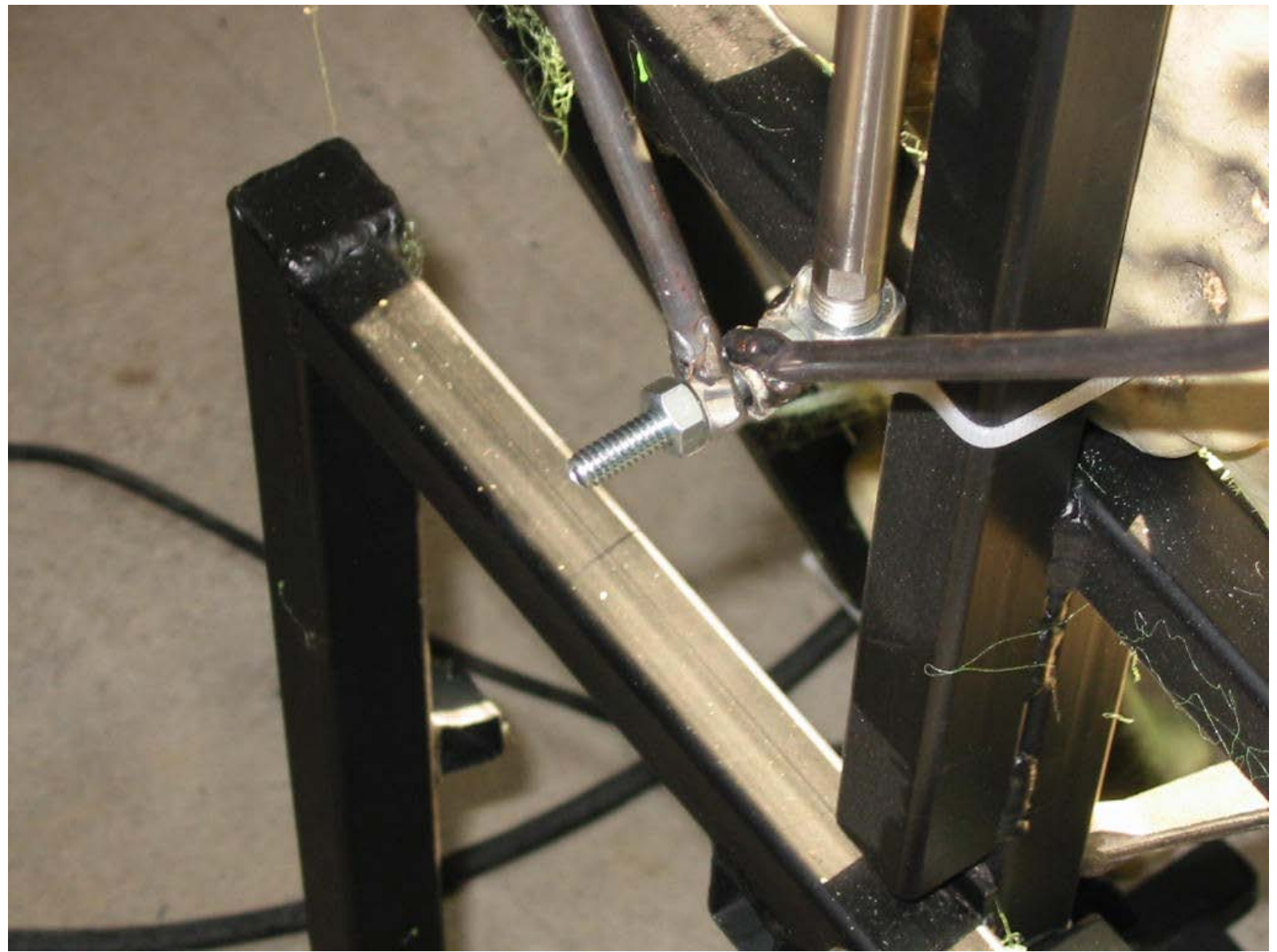




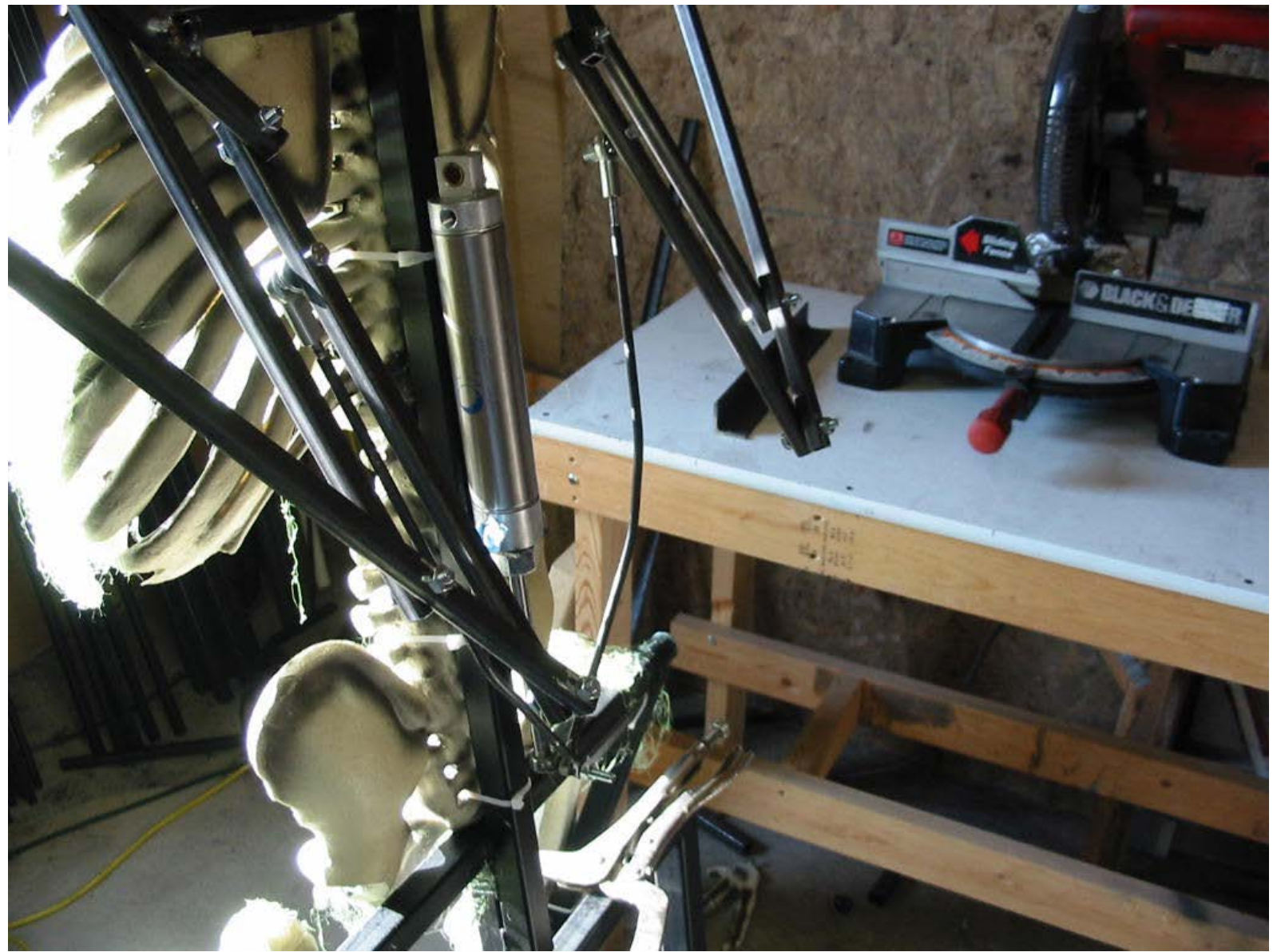


















## Bourn Again Creation's Halloween Page

# Headless Horseman

Page 5 "the materials for building the horse"

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