



<http://www.deadmansinne.com/>

Hot Wire Cutter

This article was taken from:

<http://www.charlesriverrc.org/articles/tools/joedydruliafoamcutterps.htm> I have reposted it here as a convenience and also added some of my notes:

NOTE:

Power from a wall socket can harm or kill you. Please do not attempt construction of this unit unless you know what you are doing and understand how to work safely with electrical construction projects!

Here are the parts and their corresponding part numbers from Radio Shack used to assemble the power supply. Print this page out and take it with you to Radio Shack for easy reference. I have updated the part #'s as of April 2007.

- Heavy Duty Transformer 273-1512
- Indicator Lamp 272-712 (Any 120V lamp will do) Search for 120V lamp @ RS
- Fuse Holder 270-364 3 amp
- Fuses 270-1054
- Banana Jacks 274-725
- Power Cord 61-2859 (Use an old computer power cord)
- Insulators/Wire Nuts 64-3057
- Enclosure

A dimmer switch is also needed. These are standard home light dimmers. Get one that also serves as an on/off switch (either push on and off or rotate on and off.)

Make a wooden or metal box to house all of these devices. Some nice features you can add are: use jacks on the outside of your box to allow for the pulling wires to be connected and disconnected and use a meter wired in-line on the output side of your transformer for accurate electricity measurements.

Obtained from
Omarshantedtrail.com

Notes:

a) The drawing below is a little funny by the word Power Cord, so when you use a computer power supply cord there is usually a white, black, and green wire. Looking at the drawing and going clockwise the GREEN wire is the Ground Wire, the middle wire which appears to be connected to nothing is your BLACK wire (which connects to the lamps, and the WHITE wire is the bottom wire going to the dimmer.

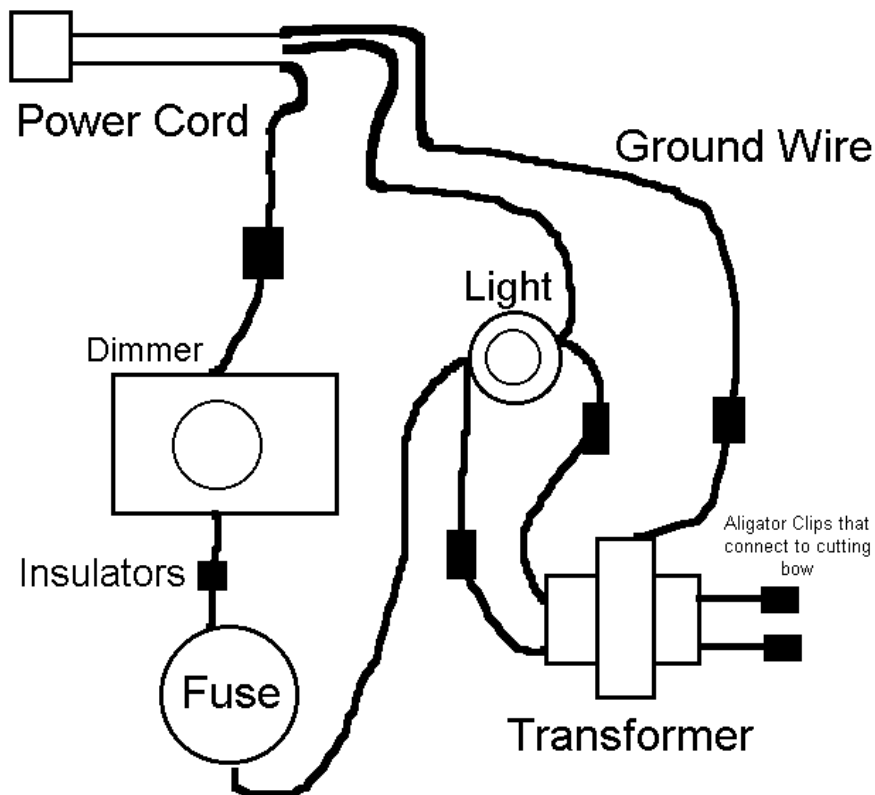
b) I have added a second indicator lamp between the black/white wires. This let's you know if the wire cutter is powered on, the other Light (indicator lamp) tells you if your wire is on.

c) My recommendation is to place everything in a plastic project box from RS.

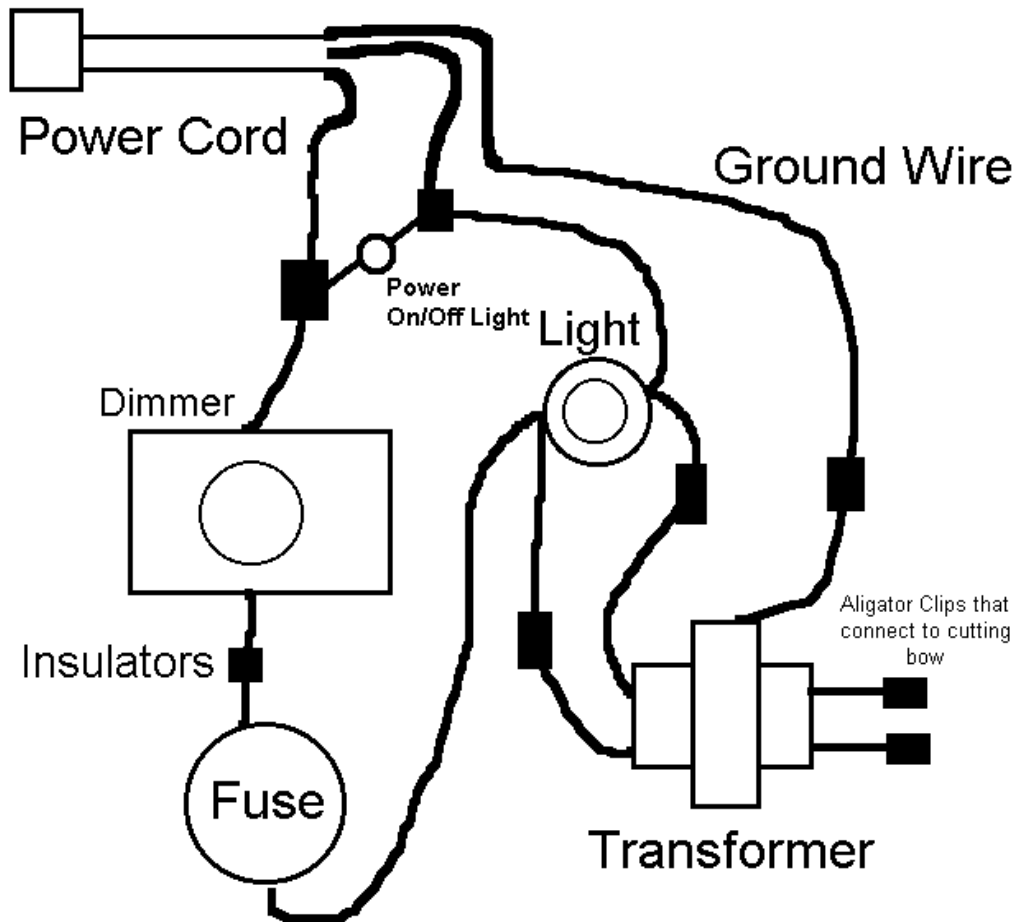
d) You can buy a meter if you want to get fancy, but it's really a waste of money.

Here is a picture of how to put it all together.

This diagram is without the power lamp:



This diagram is with the power lamp and the drawing I used:

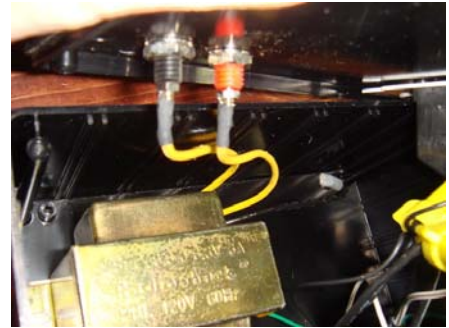
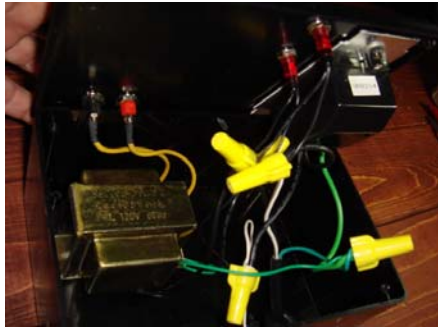
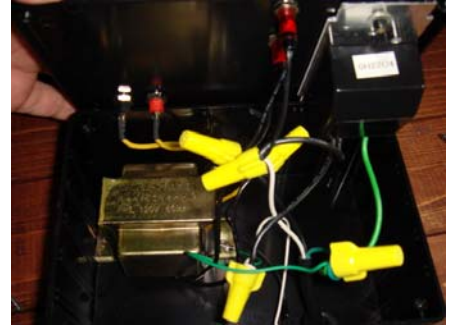


Bows/Rigs:



Depending on what you're cutting will determine the size of your bow. I used to cut R/C airplane wings so I had a pretty big bow already made. The only key point for a large cutting bow is to have a constant tension on the wire, so when you make it place a spring across the top (see pic). You also don't want so much tension that the wire snaps. For smaller work I just cut and bend the wire to the shape I want and staple it to a piece of scrap wood.

Obtained from
Omarshauntedtrail.com



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Wire:



I've used stainless steel trolling wire with great results. I bought 2 different sizes from <http://www.cabelas.com> item# IH-310065. This is more wire than you'll ever use in a lifetime but it was cheap and I couldn't find it locally. I've heard from various people that some Wal-Mart's carry this in the fishing department and also you can use a guitar string (Must use the small string the other 5 are coiled and will not work). I use the

.020" for smaller work since it's thicker and able to keep it's shape and the .016 for straight cuts on a bow.

Tips on cutting:

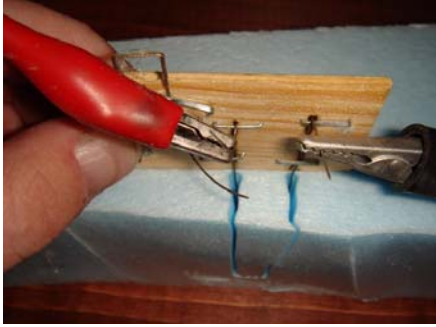
- 1) Go **SLOW** let the wire do the work. I can not stress this enough. If you muscle your way through the cut your sure to get small peaks and valleys which can be avoided. All is not lost though.....Small valleys and peaks can easily be knocked down with a sanding block. I have one that is used for sanding drywall and it works great.



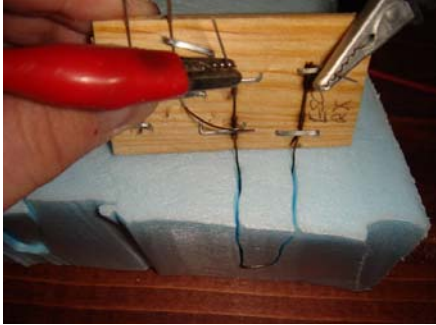
- 2) You want the wire to glide through the foam, try not to let it drag, the most common cause is your pulling the wire to fast or #3.

When cutting a block, the wire should come out the side at the same time. You should not have to wait for the center of the wire to come through the foam.

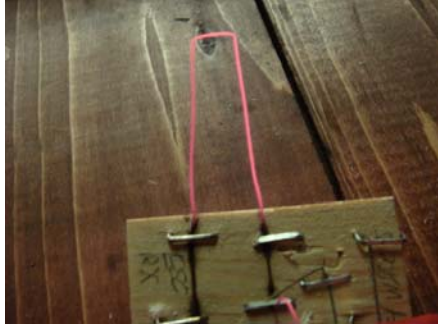




3) The wire is not hot enough. You want the wire hot enough (vary the dimmer) to cut through the foam, but not so hot that it leave a huge kerf. (The kerf is the width of the cut as the wire goes through the foam) In the first pic the wire is way too hot and melting too much foam. The second pic is perfect. (a little wavy but that's because I'm taking pictures.) The perfect temperature is when the wire comes out the other side of the piece you are cutting and you see fine strings of foam. (pic#4)



4) Start the dimmer low, on my setup the wire does not get hot until the lamp starts to glow, which is a good baseline.



5) A longer wire requires more power than a short piece of wire so remember to turn your dimmer down when switching jigs. I have a habit of pressing the dimmer (which shuts the wire off), switching to a smaller jig, and tapping the dimmer on.....needless to say, the wire glows orange and if I don't kill the power quickly the wire will break/melt. The second picture IS NOT what you want.

6) Gunk will accumulate on the wire after cutting a lot of foam. Clean the wire with steel wool and replace smaller jigs every so often (or if you bought the above spool of wire just string a new piece)



7) Remember spray paint and some glues will eat foam. Always try on a small area. This is a good lesson:

Look at the first picture, the first spot on the foam in spray adhesive (can behind), the second spot is also spray adhesive (can behind), and the last spot is black spray paint. They are both the same 3M Super 77 you say.....Look at the second picture, as part of a greener earth 3M changed the ingredients and now puts acetone in the adhesive. **ACETONE EATS FOAM!**



Note: Someone has told me that if you spray the 3M Super 77 farther away from the foam, the acetone will evaporate in the air before it hits the foam. I have not tried this yet.