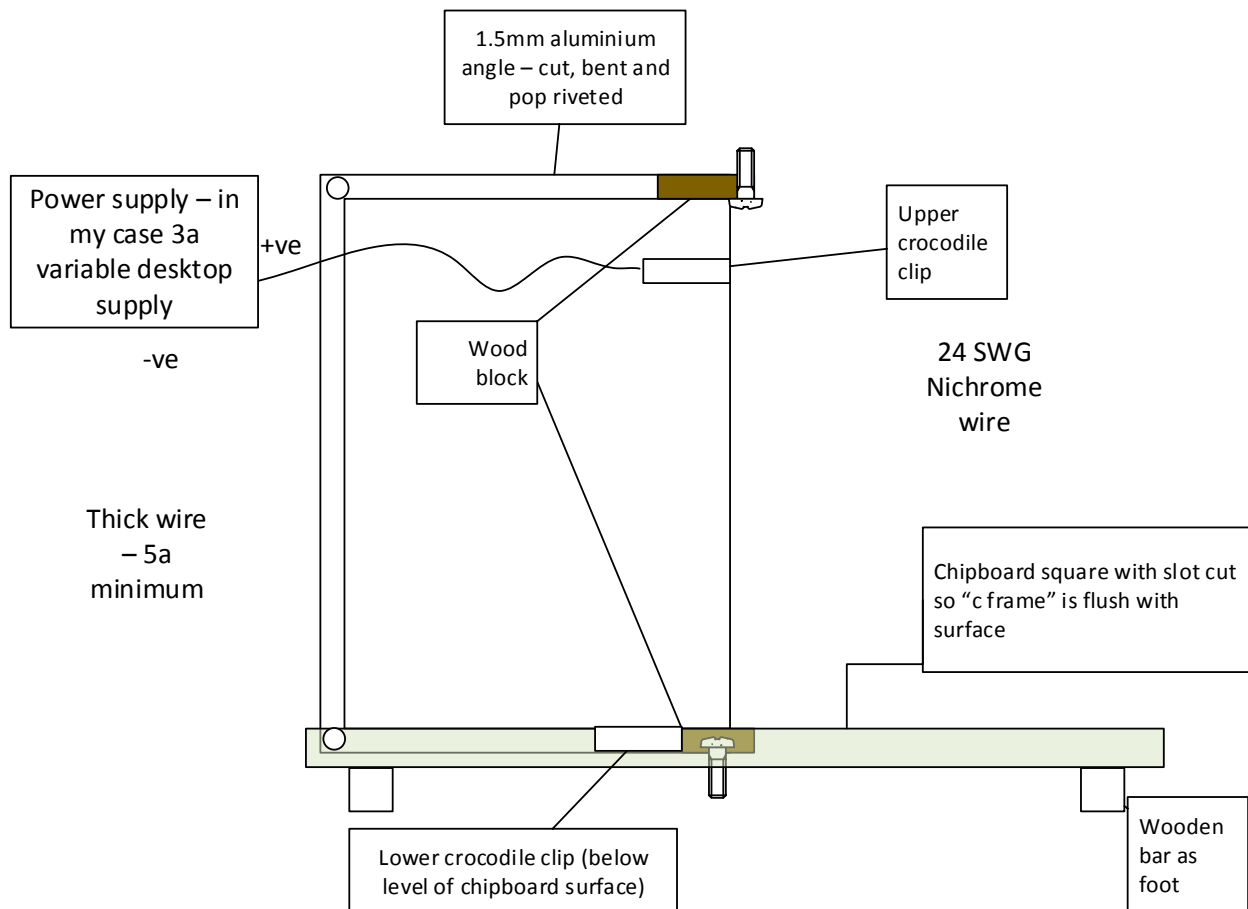


## Instructions – Hot wire cutter – basic overview



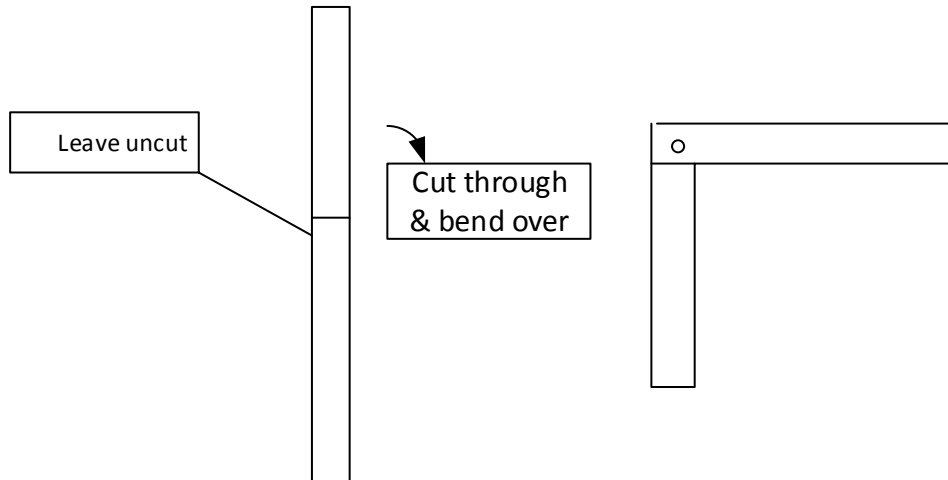
Materials – This is what I used because it's what I had - all of this can be different proportions if desired.

- approx. 60 cm – aluminium "L" strip – I used 15mmX15 mm
- 30 cm X 30 cm chipboard
- 20 Cm Nichrome wire (available ebay – I use 24 SWG)
- 12V 3a variable power supply (can substitute for a battery)
- 70 Cm square wood strip
- 2X M3 machine screw washers and nut
- 4 15mm woodscrews

### Assembly

#### Step 1 "C frame"

Mark off 15 CM from each end and cut through one side of the Aluminium strip, ensuring that both cuts are in the same side, and, leaving the other side intact. Bend the strip over 90° so that the Aluminium overlaps on the inside of the bend and rivet to form a strong “c”



Next cut 2 pieces off the wooden strip 5cm long place inside the bar and secure with woodscrews. Finally Drill through the wooden strip and insert M3 bolt – use this to secure nichrome wire.

Now to put the whole thing together as above – connect at bottom a small crocodile clip attached to some relatively heavy gauge wire and another at the top as shown – Connect this to the power source – ideally this should be variable in nature as you will need to experiment a bit here. Start with a low voltage low current supply (I started at 3V from my 3a supply) You will need to supply at least 2a.

Now gradually increase voltage until the wire starts to glow – I found that around 7.5 V got a good hot glow along 20 cm of wire. you can increase the heat by moving the 2 croc clips closer together, or applying more power. Don't over do it though or the wire will melt !

. As current passes only between the 2 clips, the wooden supports don't start to burn.

How to Use –

I found a few tricks – Acrylic cuts at 140° C plus. Glowing wire is around 400° but loses it's heat very rapidly to the plastic – I found flat cutting is relatively rapid for Acrylic less than 1 mm thick but at 2mm it was slow and difficult to get a straight cut. I got round this by instead of presenting the edge of the 2mm sheet, which only provides a small contact, I present the “flat” of the sheet to the full length of the wire. This gives a long straight cut, which then goes through the thickness of the sheet. If the wire cools, pull the acrylic back for a second or two to allow it to heat up.



Acrylic produces truly nasty fumes ! – I do it under the cooker extractor or outdoors.

If you find your acrylic bends out of shape during cutting – all is not lost ! a little heat from a heat gun will allow you to bend it into almost any shape – NB very hot so use pliers and a bit of metal strip.