DC Jack Repair Guide for vpr Matrix 175B4 Laptop

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Background

Parts List

DC Jack schematic

DC Jack removal

Construction of external jack

Soldering wires to motherboard

Modification of power supply plug

Place motherboard into laptop case

Bad DC jack caused laptop to quit intermittently

Repair options seemed to be limited.

- Could not find a pcb mounted slim jack rated for the correct voltage and current in the Mouser catalog that would fit the motherboard.
- Decided to extend wires from the pcb to an external jack.
- In order to allow a three wire connection that includes a switch, a switchcraft panel jack was selected.
  - Allows for the jack to be easily replaced again without dismantling laptop.
  - Custom look screams nerd or pathetic—maybe this should not be considered a positive.

What is needed to make the repair?

- Decent soldering iron (preferably temperature controlled.)
- Solder wick.
- Solder sucker (it was a life saver for me.)
- Good solder (62-36-2 lead-tin-silver)
- Wire strippers, pliers, scissors.
- 18 or 20 ga. wire (I used 18, but it was too thick.)
- alcohol swabs, isopropyl alcohol, or other cleaner.

Parts list for what I ended up buying

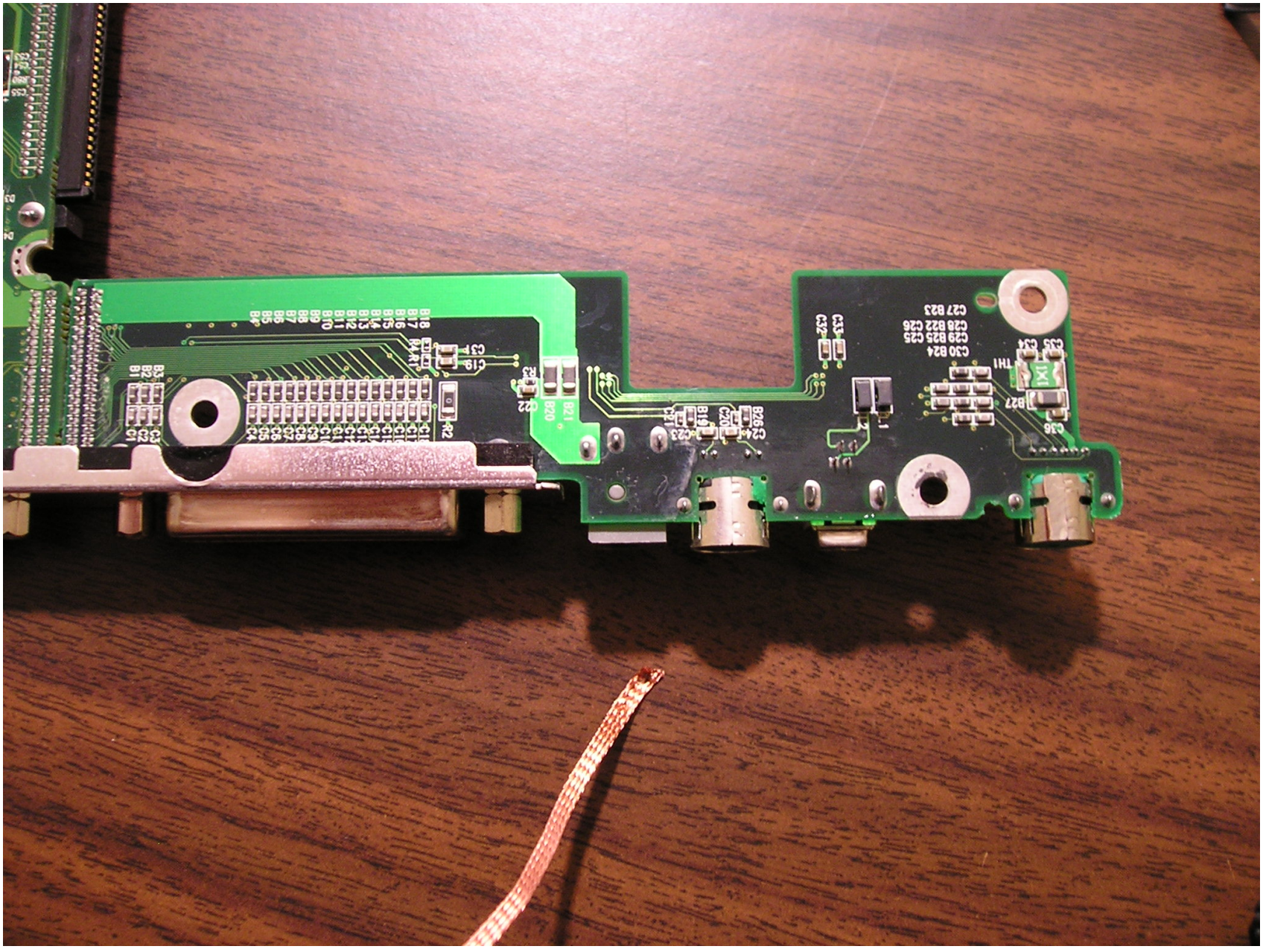
Bought items from:

- `http://www.circuitspecialists.com/`
- `http://www.mouser.com/`

Part Description	Catalog No.	Price
Switchcraft 712A	Mouser Part # 502-712A	$2.29
Switchcraft 760K	Mouser Part # 502-760K	$3.48
Silver-Bearing Solder (1 Oz.)	RadioShack Part # 64-035	$3.99
Desoldering Braid	RadioShack Part # 64-2090	$3.29
Solder wick #3 Green 5'	Circuit Specialists 425 Green	$1.49
CSI Solder Station	CSI-Station 1A	$34.95
Heatsink	Circuit Specialists HT-156	$1.99
ESD Safe Desoldering Pump	Circuit Specialists ZD108K	$4.99
	Total with shipping	$76

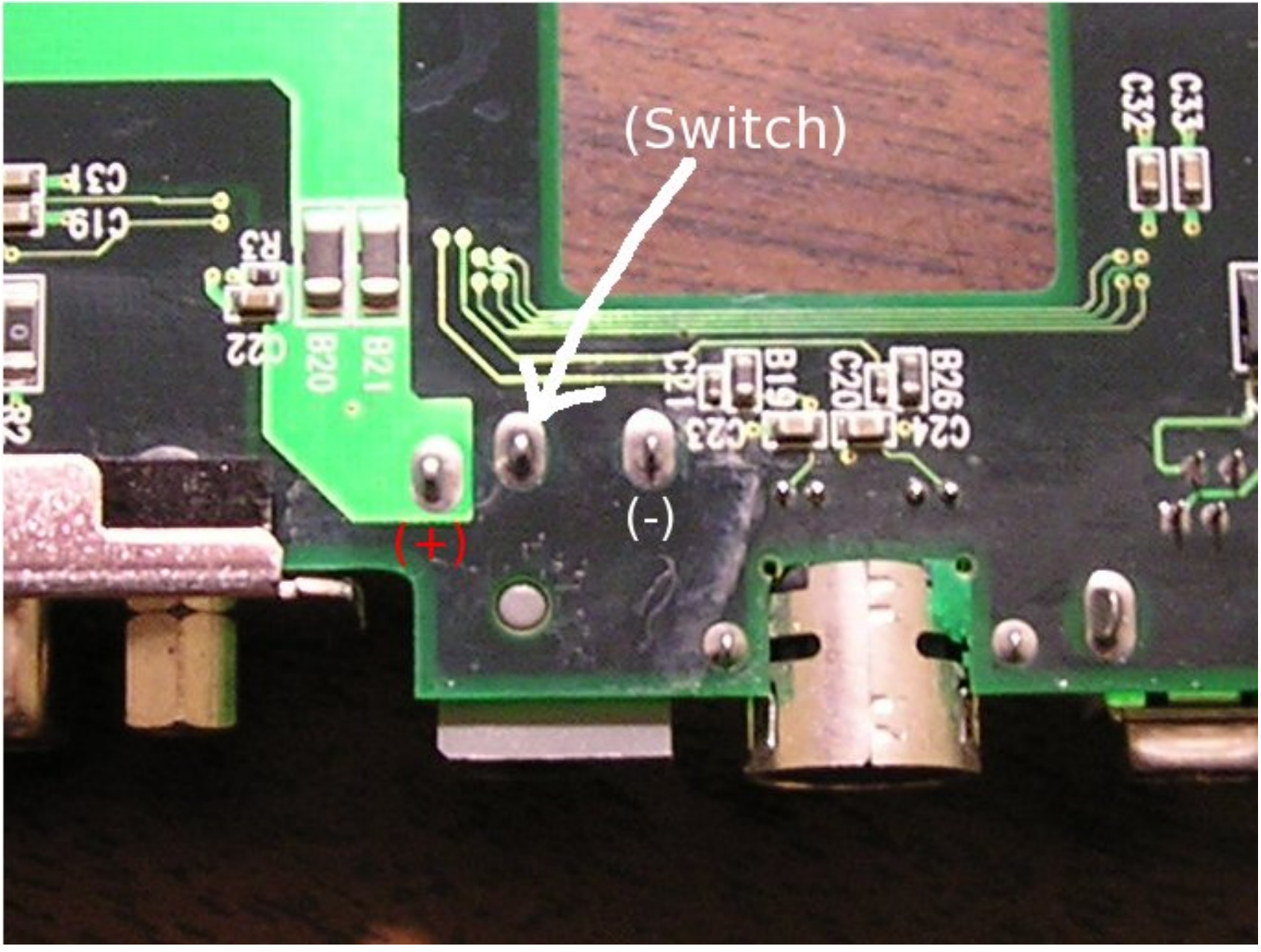
Any one from the above solder wick/braids will work. The shipping cost from Circuit Specialists was $13.49. I believe the shipping cost from Mouser was about $6. I also used the following: volt/ohmmeter, scissors, and wire cutters/strippers.

Bottom view of DC jack



Positive electrode is closest to the printer port.

Closeup BOTTOM view of DC jack

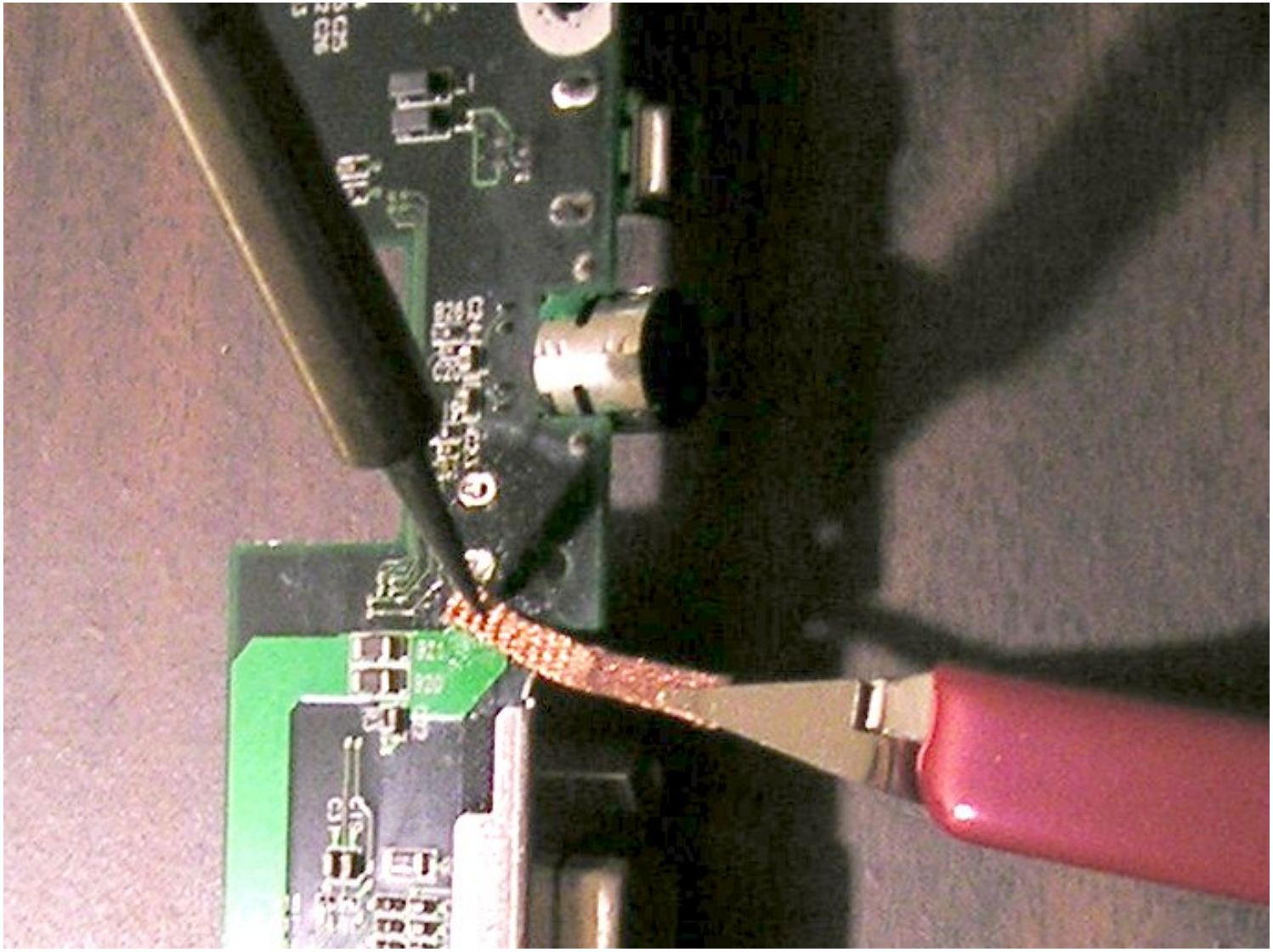


Positive electrode is closest to the printer port.

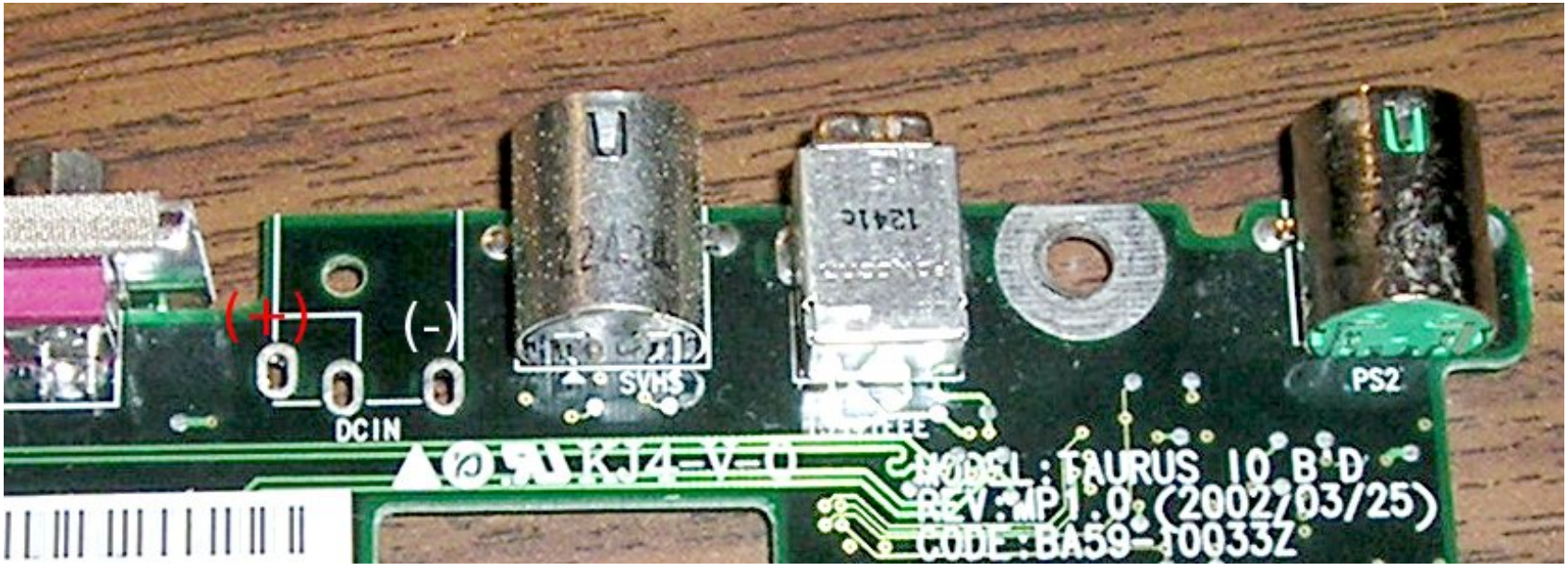
Steps used to remove jack

- I tried to remove jack by “wicking” the solder from the leads of the jack. I applied the tip of the soldering iron (set at 300°C) over the solder wick above the solder points.
- I was unable to remove much solder. I tried a new method to remove the jack since I was afraid of heating the pcb much higher.
- Switched to using a solder sucker.
  - Alternated heating the solder points and sucking out the solder.
  - As solder was taken out of the joint, I was able to rock the mounted jack off the motherboard before the solder completely solidified.
- After the jack was removed and celebrations ended, I removed the remaining solder using the solder wick at about 300°C.
- I cleaned the area with an alcohol swab and put the motherboard aside until later.

Removing remaining solder using solder wick



Closeup TOP view after cleaning



Positive electrode is closest to the printer port,followed by the switch and then the negative electrode.

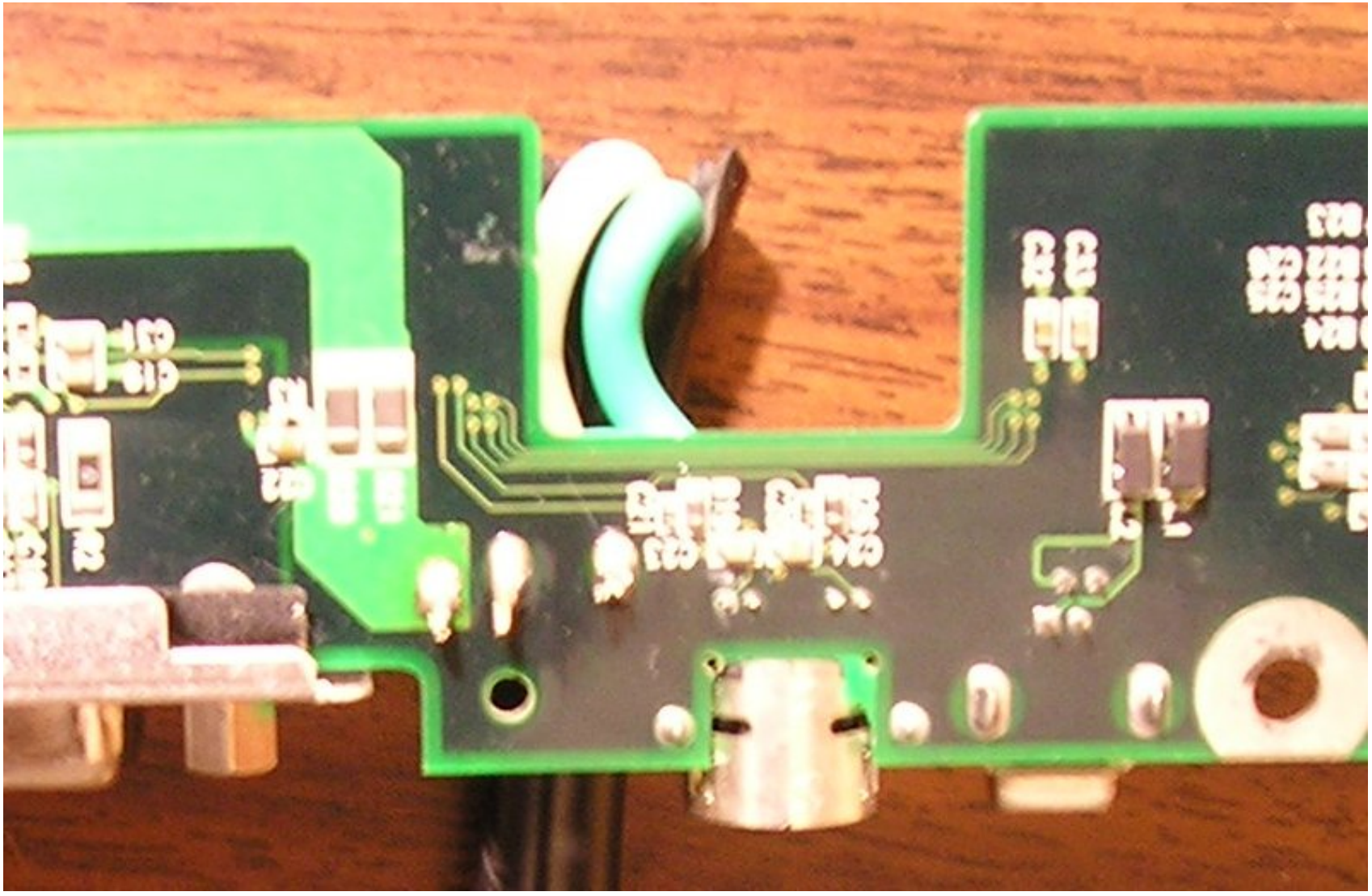
Steps used to make external jack

- First, found suitable wires from an old monitor/computer grounded power cable.
- Three 18 ga. wires contained in an external sheath.
- Cut about an 18 inch length section of the power cable.
- Removed about 1cm of insulation from each end of wire.
- Tinned each wire by applying a clean soldering iron tip at 350°C to the wire and the cold solder to the hot wire. Never use the soldering iron tip to directly melt the solder.
- On one end of the old power cable, I soldered the 3 wires to the external switchcraft DC jack. Again, I heated the wire to 350°C. For a good joint, it is important not to move the joint as it cools.
- On the other end of the cable, I tried to place the tinned wires through the appropriate electrode holes in the motherboard. Unfortunately, the tinned wires no longer fit. I decided to trim the wires with a wire cutter at a swallow angle. I then threaded these arrow/pin looking tinned wires through the holes of the motherboard.
- I soldered the tinned wires with the motherboard upside down as shown in the bottom views at 350°C.

Closeup view of external DC jack

Positive is black, switch is green, and negative is white.

BOTTOM view of soldered wires to the motherboard.



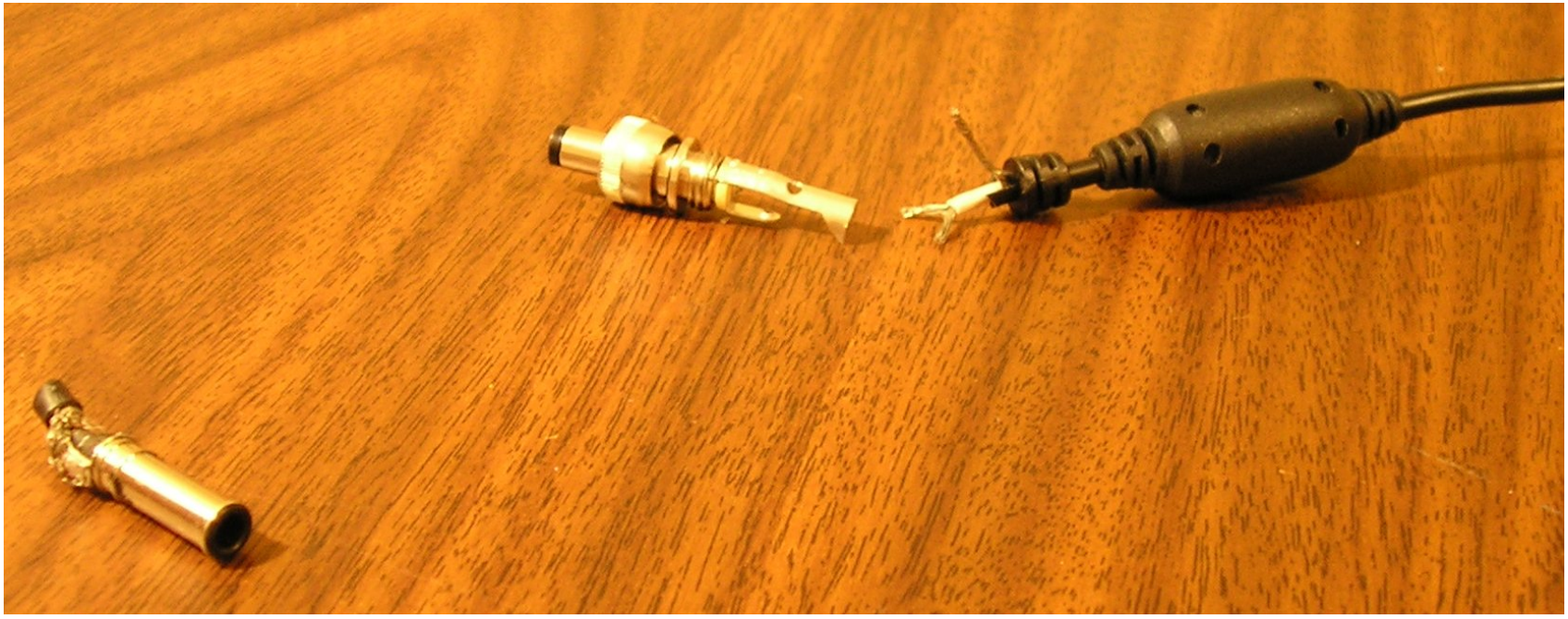
I trimmed the ends of soldered wires before placing the motherboard into laptop case.

TOP view of soldered wires to the motherboard.

Positive is black, switch is green, and negative is white.

Cut/strip the old plug

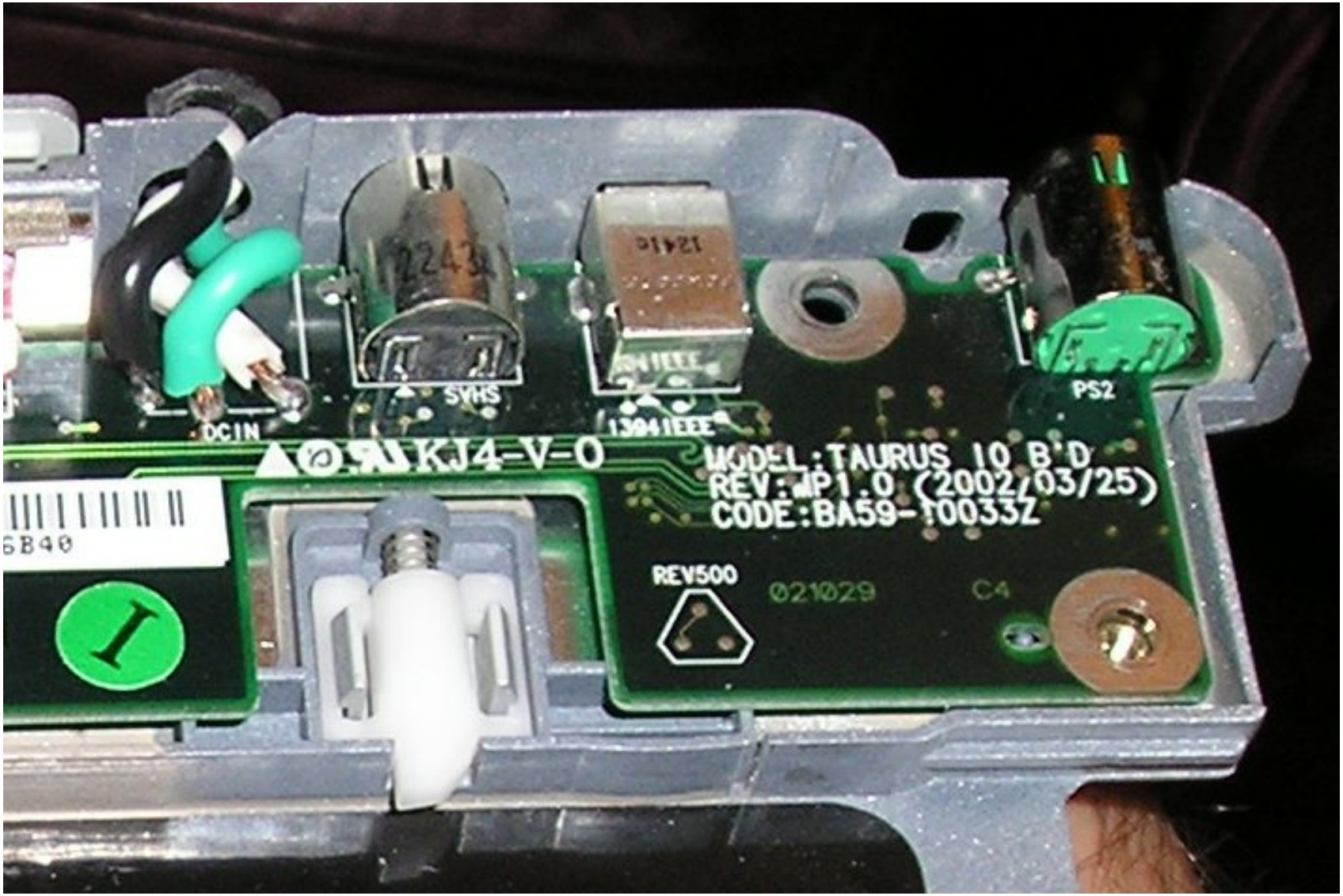
Arrange the wires prior to soldering to new plug.



Aluminum wires are much more brittle than copper.

Finished soldered plug being suspended by another jack.

TOP view of motherboard in laptop case.



A small slit is cut into the bottom plastic case to allow the wires to be placed in the same hole as the old jack.

Finished job showing a red light for charging.

If only the battery worked now....