HP4400 notes

How to build
- Follow the schematic for component values, but see the notes below.

Important changes!
- Gain pot = 20K (instead of 100K)
- Bias 5K multiturn trummer <- don't use this! Link pads instead
  The square pad should be linked to the middle pad
- R6 and R12 – 10K (instead of 8.2K)

Notes PCB
- C39, C41, R27 and R47 – Solder these on the underside of the circuit board! Otherwise they will be in the way for the heatsinks for the transistors. Also put PVC tape over these pads on the component side and cut off the lower corners of the heatsikts so that they don't create a short againt these pads.
- Drill holes for the bottom of the enclosure for each transistor heatsink – it's mounted again the bottom place that acts as a huge heatsink.
- Power transistors (BD139/BD140)
  - All these should be mounted with the side with metal aimed downwards (heatsink side).
  - Note which ones that are BD139 or BD140. They are nog logically placed on the PCB.
  - All transistors must have TO-220 heatsinks.
  - They also need "isolating bushings" (TO-220) between each transistor and heatsink (aka "transistor rubber washer"). Measure carefully with a DMM to make sure that they are not making contact.
- Match all four 10K resistors in the input gainstage as close as possible (R2, R3, R4, R6 och R9, R10, R12, R13.
- These condensers are all 100nF: C31, C32, C33, C34, C35, C36, C37, C38, C39, C40, C41, C42 – Use multilayer ceramic type
- DC only needs to be connected to one side of the circuit board (it has two options).
- R55 and R56 OR R57 and R58. You only need one pair, on the side that you have connected the DC input to. The value on these resistors are 47ohm (47R).
- SW1 is a DPDT on/on switch
  It switches the inputs so that it's either two mono inputs (one for each channel) that are sent to both ears, or one stereo input that both headphone outputs share, where input one is the left headphone and input two is the right headphone. It's not summing L/R in mono mode, but two separate inputs, so that it can be used with aux sends from a mixer.
- R31, R51 = 10K