VBITNGC Building Guide

Index:

Chapter 1: What's it about

At some point in time Franz G. came up with the idea to build a small amplifier with a tube front end and the well known LM3875 as power amp. He started a thread on www.diyaudio.com so we could all follow his adventures whilst designing this little beauty. The link below will get you to this thread.
http://www.diyaudio.com/forums/showthread.php?s=&threadid=48118&highlight=
A few pages down the line digi01 also got interested in this little gizmo and started designing some small PCB's so other people could build this amplifier also.
A new thread was created to follow up on other DIY'ers experiences regarding the VBITNGC.
http://www.diyaudio.com/forums/showthread.php?s=&threadid=67561&perpage=10&pagenumber=1
Now, with all the good intentions of both Franz and Zang a few errors found there way into these circuit boards. In this building guide I will try to cover all the corrections that have to be made to get this project to a good end. Most of the errors are situated on the Power Supply board and the Tube board.

Chapter 2: References and corrections

Power Supply board ver#1.0
1. D1 through D8 and C1 through C8 are a bit dodgy. Most of you already figured out that the diodes goes in place of the "C" markings and the parallel cap's in place of the "D" markings because of there size and pin spacing. In the picture posted by Zang you can see that the diodes and suppresser capacitors are indeed swapped place because of the pin spacing. Not a big problem here, just a case of the silk screen being mixed up. D1,D2,D3 needs to be rotated 180°
Hanzwillem came to the same findings shortly after.
http://www.diyaudio.com/forums/showthread.php?postid=768239#post768239
This picture shows you the correct way of the diode placement on the PCB.

2. IC1 needs to be rotated 180°
Now something that took me a while to figure out, the time delay circuit.
I populated the board with al the necessary components and when I fired up the Power Supply board it came to my attention that the relay didn't activate after the approximate proposed 20 seconds. First I thought it was a faulty relay but when I applied power to the coil it worked. Next in line was the timer IC that might be the culprit, Franz assured me that these things are quite sturdy and therefore hard to believe that this was the cause of the malfunctioning of the circuit. I replaced it anyhow with another one but without any luck. Only when I started comparing the PCB traces with the wiring diagram it dawned on me that the layout on the circuit board is wrong.

IMAGE URL:http://www.diyaudio.com/forums/showthread.php?postid=798298 - post798298
IMAGE URL: http://www.diyaudio.com/forums/showthread.php?postid=798435 - post798435

As you can see in the above images there are some differences. On the left is Franz's circuit, on the right the actual PCB layout. The left image shows you that the 47µF capacitor is connected between ground and pin 2 (6) of the timer IC and that the resistor (or trimmer) is connected between +VCD and pin 6 (2) of the timer relay. On the PCB the capacitor goes from ground in series with the resistor to pin 6 of the timer relay. Get the picture!
Now there are two ways of solving this problem.

1. For those who want to place a fixed resistor they can do it as in the following picture that Zang posted on the forum.

IMAGE URL:http://www.diyaudio.com/forums/showthread.php?postid=798627 - post798627

Cut one lead of your resistor to about 4-5mm from the body and solder that one on pin 8 of the timer IC (right image). Put the other lead through the first hole of the trimmer (which has the trace to pin 6 of the timer IC) and back through the hole of the fixed resistor farthest away from the timer IC (left image). I hope I'm making myself clear.

2. For those who want to place both the resistor and trimmer follow the next step.

IMAGE URL:http://www.diyaudio.com/forums/showthread.php?postid=798444 - post798444

Cut the trace from pin 6 to the trimmer (crossed red on the image).From the solder pad of the trimmer (that was connected to the timer IC) make a connection with a piece of wire to +VCD. This can be done from pin 4 or pin 8 of the timer relay or the relay coil.
With another piece of wire make a connection from the + side of the capacitor to pin 2 or pin 6 of the timer IC.(the additional connections are the blue lines in the image)
To keep it simple I would choose option number one. With a fixed resistor of 470K you will have about 27 seconds before the power to the amplifier is switched on.

3. The VAC-in for the HT supply is marked as 85V. This needs to be ±40-45VAC to get around 60VDC after rectifying.

Tube buffer board
And now the final problem to tackle is the tube socket. For some reason the Tube PCB numbering is mirrored.

3875 amp board is not problem

So, all you have to do is solder the tube socket on the solder side instead of the component side. The rest of the components can be soldered on the PCB as on the silk screen.
I hope that with this guide everybody will be able to finish there project to a good end. Thanks to Franz, Zang, Wim and Hanzwillem for pointing out to the errors and come up with solutions.

2005.12.25 Write by Walter