

300B SE Valve Amplifier Kit

User Manual

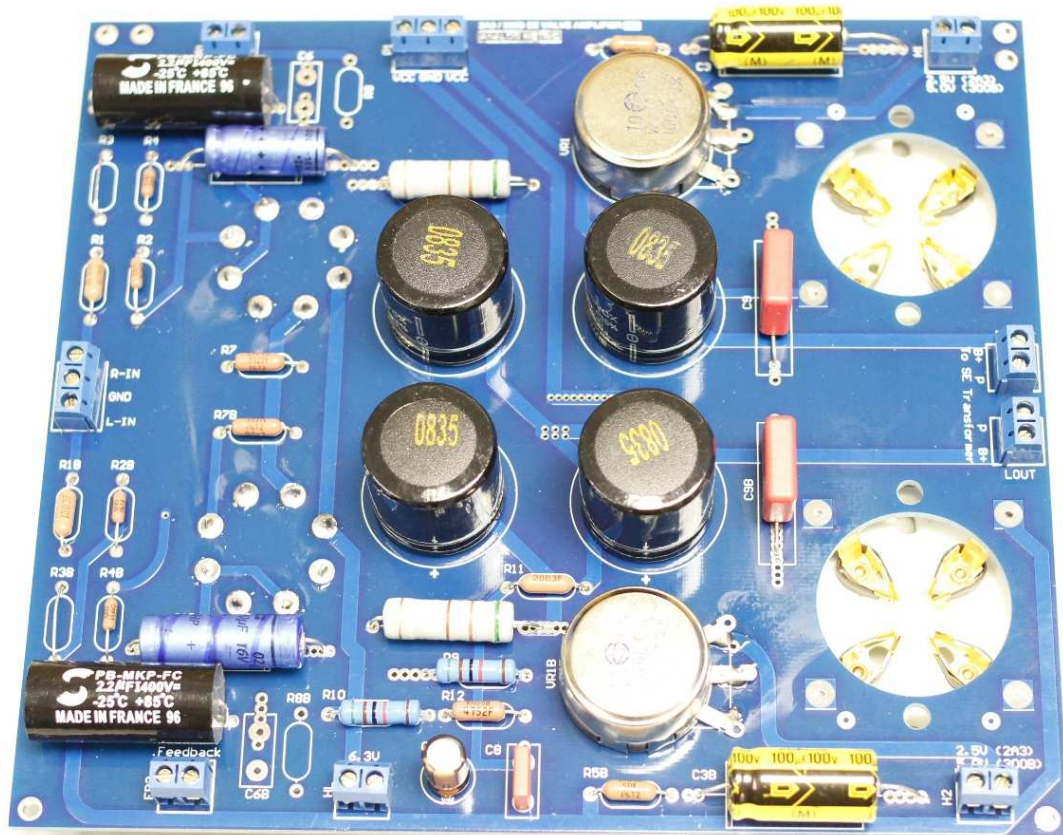
Analog Metric

www.analogmetric.com

sales@analogmetric.com

Copyright© 2013 All Rights Reserved





SPECIFICATION

- Vacuum tubes: two 300B and two 6SN7 vacuum tubes.
- Voltage gain: 5dB
- Gain flatness: <1dB for 20-20kHz
- 3-dB Bandwidth: 28kHz
- Frequency range: 20-20kHz
- Input Impedance: 90k Ohms
- Input sensitivity: 3.5V RMS
- S/N Ratio:
 - > 98dB (5W, 8 ohms, 1kHz)

- THD+N < 5% @1kHz
- Maximum Output Power: 8W at 8 Ohms
- Output transformer 15-20W:
Primary impedance: 2.5k/3.5k Ohms 120mA
Secondary impedance: 4, 8 and 16 Ohms
- Stereo single-end input and output
- Power requirements: one or two 300-350V DC (total 250mA), 6.3V AC/DC (1.5A), and two 5V AC/DC (1.5A).
- PCB dimension: 196mm (W) x 175mm (L)
- PCB thickness: 2.4mm, double layer, 2oz copper.

PRECAUTIONS

- Do not use any body parts to touch the metal parts of the kit after power up or power off, since the high voltage capacitors may not fully discharge. It may cause serious electric shock.
- Use a power transformer with fuse (3A) socket to limit the supply current in case of short circuit or incorrect assembly.
- Double check the assembled components with the part list.
- Do not attempt to measure the voltage by multimeter with hand after power up. The probes of the multimeter should be mounted by some stands to the points of the measurement before switching on the power supply.
- Turn off the power supply if you observe any smokes or hear strange sound coming out from the transformer or board. If there is short circuit, the transformer will be getting very hot shortly.

PROCEDURES

1. Solder the resistors on the top of the board. The resistance label of the Dale resistors should face upward for easy of future debugging or modification.

2. Notice to the direction of the electrolytic capacitors C1, C3-5, C7, and C8 (the positive terminals are marked by red circle as shown in Figure 1). There is no direction of the thin film capacitors. Double check the direction of the electrolytic capacitors, as it may cause hazardous.

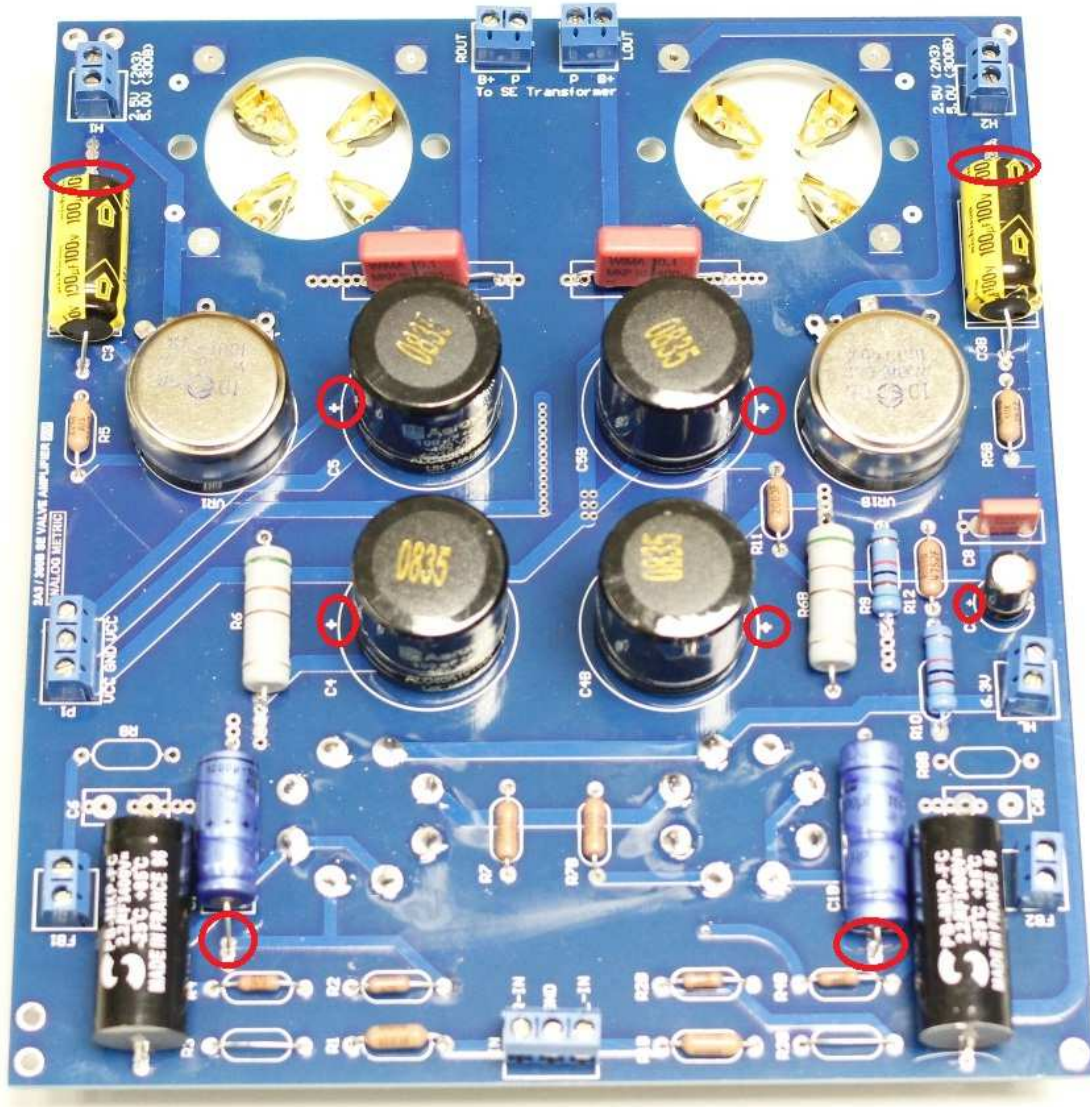


Figure 1: The positive terminals of the electrolytic capacitors are marked by red circles.

3. Solder the tube sockets. The bigger holes of the 4-Pin plate sockets correspond to the PIN1 and PIN4 of 300B (tube filament voltage). The direction of the 8-Pin octal tube sockets for 6SN7 match with the screen silk of the board as in Figure 2.

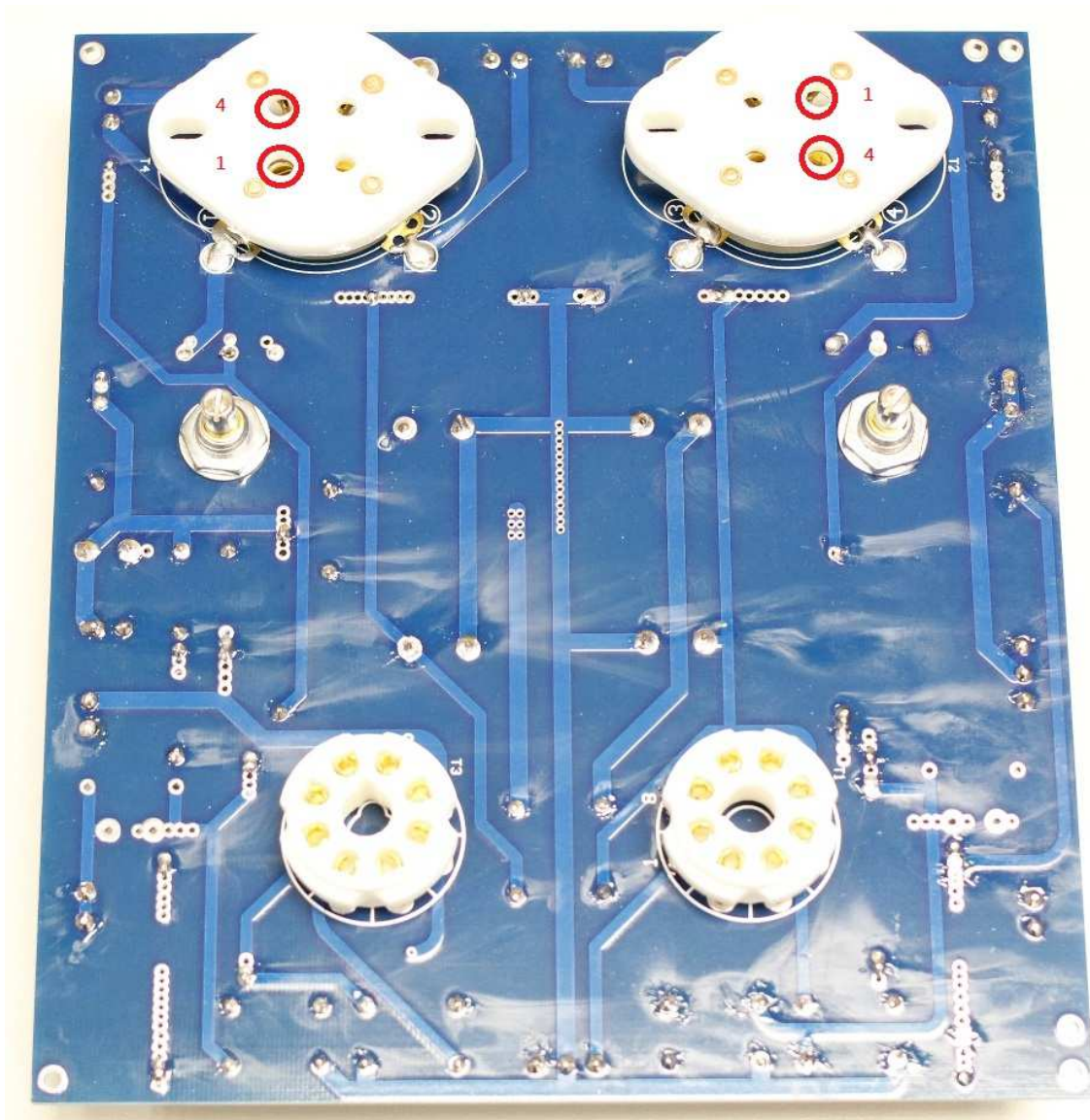


Figure 2: Direction of 4-Pin tube sockets for 300B and 8-Pin octal tubes sockets for 6SN7

4. Solder all remain components of the board.
5. Apply 6.3V DC/AC (1.5A) to connector HL, two 5V DC/AC (1.5A) to H1 and H2, and one or two 300-350V DC (total 250mA) to P1 and P2.
6. If it is supplied by a RT400 tube voltage regulator board, the input voltage to the RT400 is 260V AC. The output of RT400 connect to the P1 and P2)

7. The tube filaments grow up gradually when turn on the power supply. Turn off the power supply if there is a suddenly dropping in the supply voltage at P1, H1, and H2, or HL, or any audible hum from power transformer and double check all components and connections.
8. Adjust the cathode current I_c by the resistor trimmer VR1 and VR1B as in Figure 3. Measure the voltage V1 and V2 across R6 and R6B, respectively, so that $I_c = V1/R6 = V2/R6B$ is set.

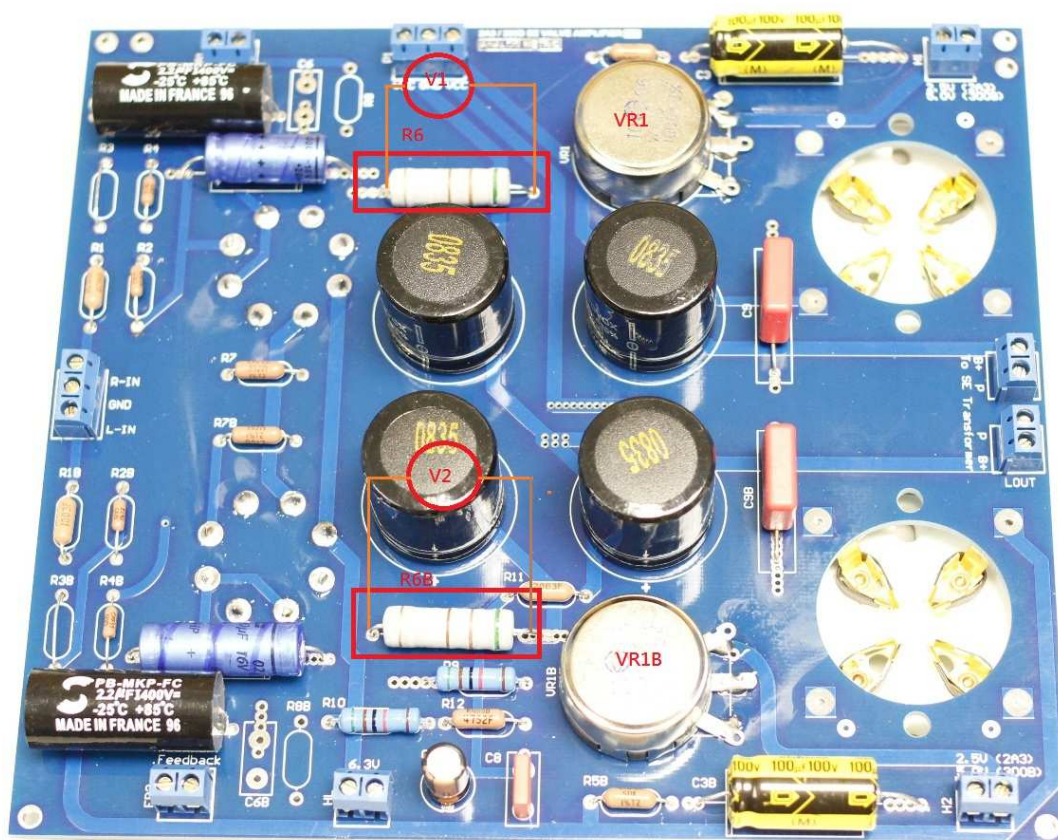
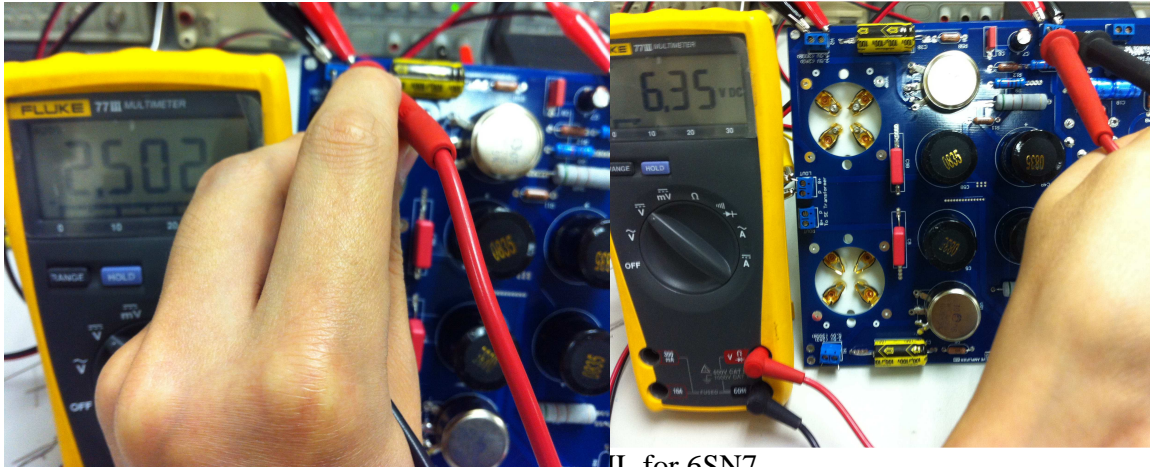


Figure 3: Adjusting the cathode current by resistor trimmer VR1 and VR1B.

9. Connect the output transformer with 2.5k/3.5kΩ primary impedance (120mA) to the ROUT and LOUT of the board.

TROUBLESHOOTING



H1/H2 2.5V for 2A3 and 5V for 300B

HL for 6SN7

