

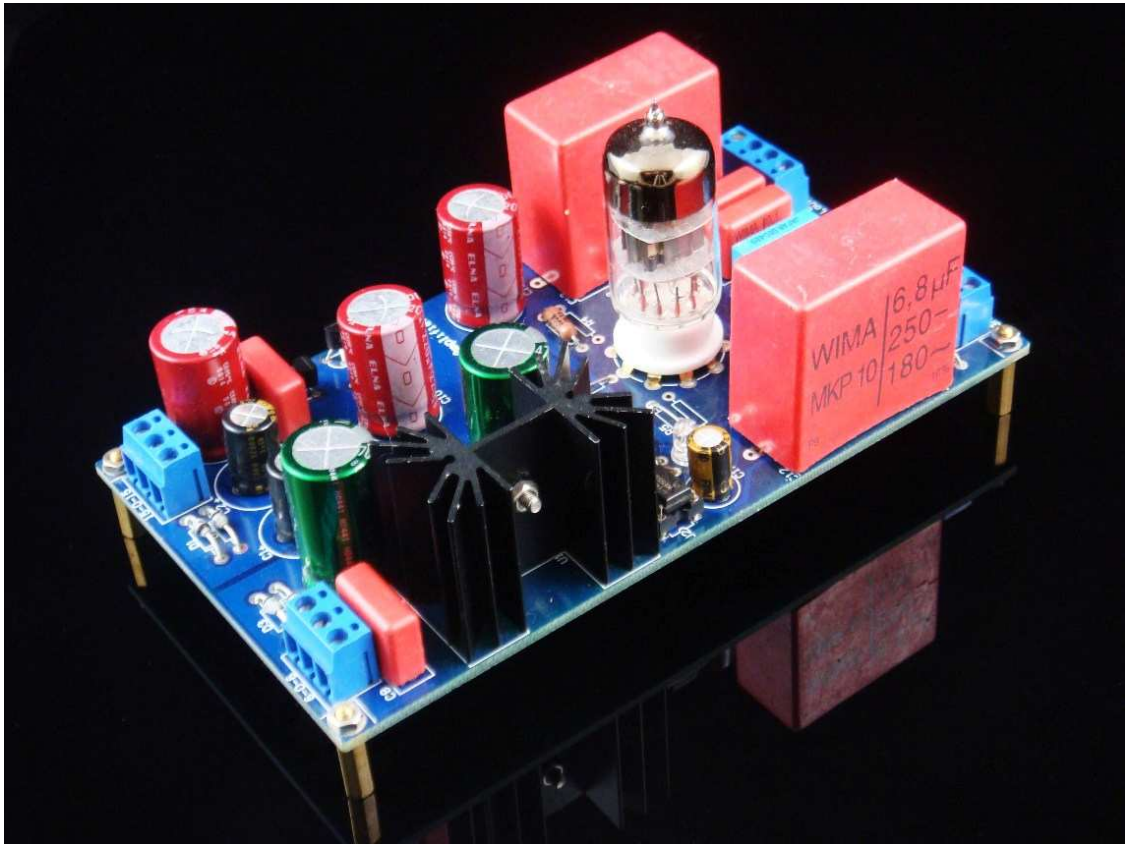
# **6N3 (5670) Tube Buffer User Manual**

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## INTRODUCTION

6N3 or 5670 vacuum tubes are found in wide applications in buffer. This is unit gain tube buffer using one 6N3 (5670) vacuum tube in cathode follower configuration with low noise JFET acting as constant current source. The gain can be adjusted by the ratio of the resistors. The tube filament is biased far from the noisy ground floor. Optional resistors are left for plate to cathode and output. Built-in power rectification and regulation circuits supply for both power rail and tube filament. Also, the output delay protection is added to the output. This tube buffer can be applied after DAC output or just before the input to preamplifier, so as to produce smooth, detail and warm tube sound.

## FEATURES

- **6N3/5670/2C51** tubes are used for two channel buffer with cathode follower configuration.
- **Provide unity gain and double output power.** The tube preamp come with low output resistance and provide high driving capability.
- For the **DVD/HDCD/CD analog output**, it produces sweet and deep audio sound after go through the 5670 tube buffer.
- Symmetric layout design, high linearity, and low distortion.
- Built-in voltage regulating circuitry and output delay protection.
- Independent supplies for power rails and tube filament.
- Filament voltage is biased at higher voltage from noisy ground floor.
- Power requirements: two 15V AC (100mA) and two 9V AC (0.5A).
- Small dimension: **160mmx90mm, 2.5mm thickness, 2oz copper**

## PRECAUTIONS

- Turn off the power supply if the transformer is getting hot or some smoke is observed or strange buzz sound is heard.
- Fuse should be used either in power transformer or main socket to avoid accidentally large current drawing.
- Always contact technicians or experts to seek help.

## PROCEDURES

1. Solder all the components according to the schematic and part list. To obtain a unity gain, use R2= 1Kohm and R5=1Kohm instead of short; while the short of R2 and R5 is for -6dB attenuation (half voltage gain).
2. Connect the power transformer 15V-0-15V and 9V-0-9V and ensure the connections are correct.
3. Turn on the power supply without put in the tube. Shut down the power supply if the transformer becomes very hot or come out some strange sound; check again the wire connections of the transformer.

4. Adjust the VR1 (500ohm) so that the the tube filament voltage (middle pin of U1) is around 6.3V DC
5. If everything is ok, the measured voltage of VCC (terminals of R2 or R5) are about 65V DC.
6. It takes several ten seconds to turn on the circuit (indication by the LED lighting) due to the out delay protection circuit. A click sound produced by the relay will be heard.
7. If the voltages are correct, plug in the tube and Enjoy it!

If you have any problem in assembly, please contact us by email to [tech@analogmetric.com](mailto:tech@analogmetric.com)