

Mods to the Mixer/preamp



The Mixer/Preamp and the mics.
Balance, Volume, Clipping detection, and Mute are all controlled from the mic position

This about the mods made to the **custom mixer/preamp** I made for personal use with our **Home Made Busking Amp**.

Minor mods were:-

- Change the jack connector which doubles as the power switch from a mic socket to the output socket
- The led which glowed red for overload, has been changed to a dual led which still glows red for an overload but also glows green to indicate that the “mute” is engaged.

The major mod was the incorporation of volume knobs for the instrument inputs

The original idea was to have all of the **relative** volume controls preset, with only a master volume control. This is because we perform usually without a sound man and getting the instruments and our voices at the right relative levels is difficult from the mic position.

It worked very well, as long as our mouths were around 4' from the mics. BUT sometimes that does not give us enough volume, and if we increase the volume then feedback howl sets in.

Moving closer to mic drastically increases the volume of our voices, but then we are too loud for the instruments.



So a mod was needed to allow us to control the relative values.

This was done by making the instrument volumes controllable by potentiometers.

The master volume pot sweeps the gain from 3.4 to 180 (or 11 to 45dB) through the mic channel with the pot being fairly linear in dB.

The amp can deliver 5.3V p-p before clipping

The 3dB points are 19Hz and 170KHz

In the interests of simplicity, and by calculation verified by measurement, I arrived at the following settings for the pots. The pots have no scales, but it is easy to think of the dot on the pot as the little hand on an analogue clock. So:-

5pm is used for highest volume with our lips actually touching the mics

4pm is right for our lips around 0.5" from the mics

3pm is right for around 1"

2pm is right for around 2"

1pm is right for around 2.5"

12pm is right for around 3.5"

9pm is right for around 7"

Beyond this point we are better off using balanced miking.

The mixer is fixed to the mic stand so all we need to do is the usual:-

Adjust the instrument volume knobs to around 12pm.

Crank up the master volume until we get feedback howl just starting then back it off a little.

Start singing around 3.5" from the mic.

If it is too loud turn the master volume

If it is too quiet move closer to the mic and turn up the instrument volume.

Here is the new circuit.

The volume control for the instruments is a little unconventional. This was decided upon based on my guitar (see below) and is designed to give a fairly constant 10K input impedance. Yes, there are better ways, but I do not have much room and I wanted to keep the current consumption low.

C6 increases the open loop gain

R8 is a "Set on Test" resistor that is used to ensure that clipping occurs on the positive swing before the negative swing. This is for the clipping indication. The led comes on as the output voltage, before the decoupling get above 8 volts.

A spin off is that if I cannot get the led to glow red with volume control set to max by laking a loud noise into the mic (it works with the mute on or off) then that means the battery is on the way out.

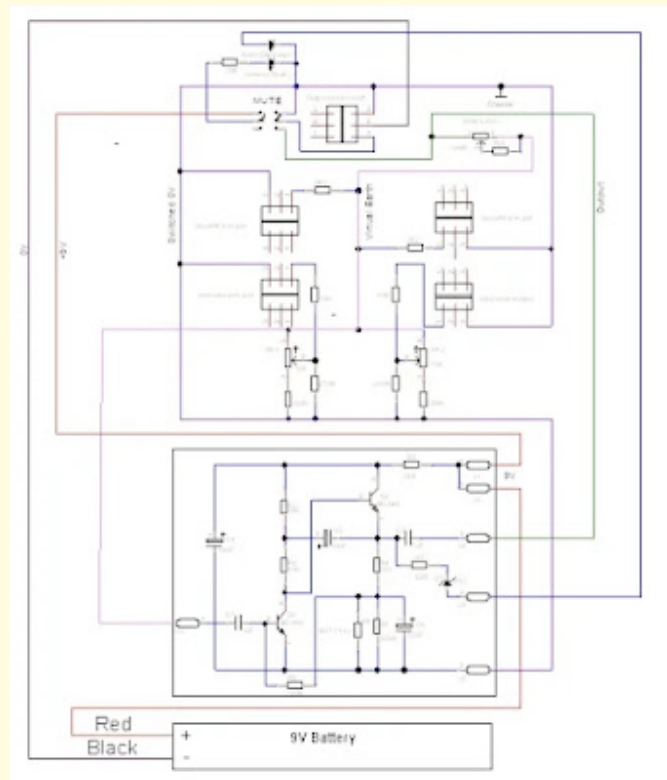


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