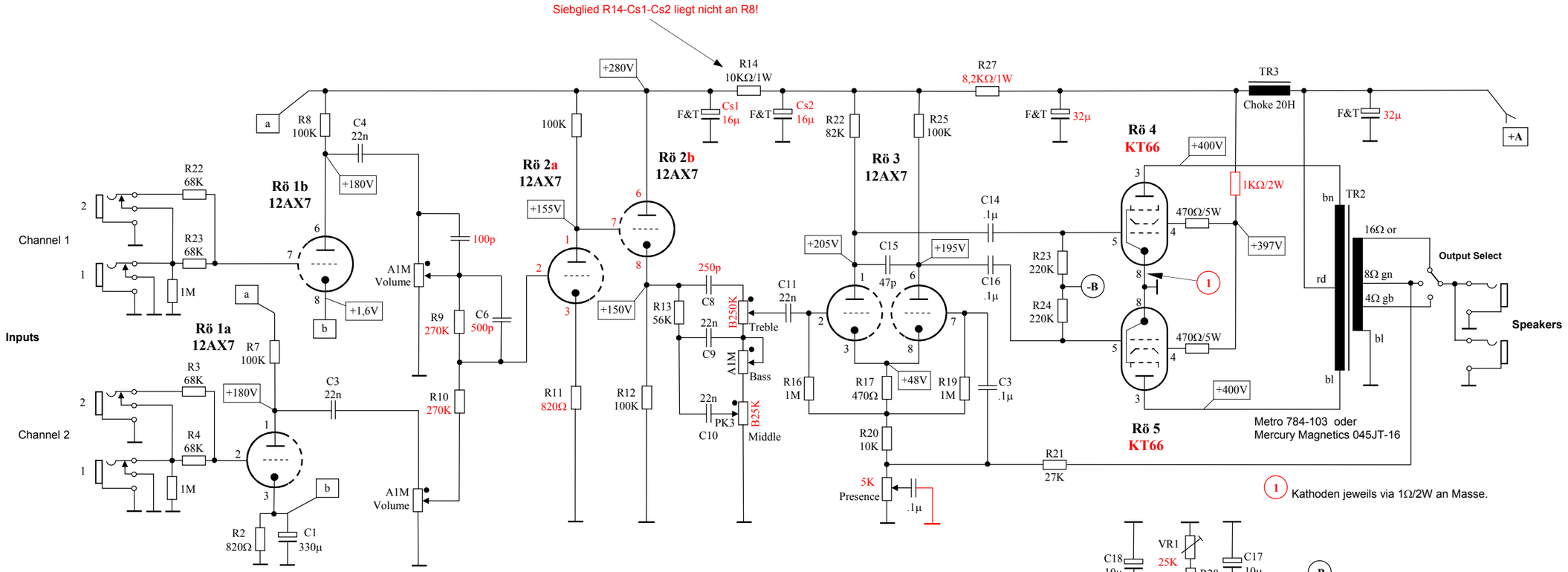


BIASING

A. Extremely important and often misunderstood, biasing is simply setting the operating parameters for a tube. In our case, adjusting current flow in the tube, at idle, using a fixed bias voltage. For **Class A/B fixed bias** output stages like in our JTM 45, a **fixed negative DC voltage** is applied to each output tube grid (pin 5).

B. To determine where to set the bias, we use a simple formula. Based on KT66 maximum plate dissipation and B+ voltage in the amp: **(27*.7) / B+ = Cathode Current.**

Here, **27 Watts** is the specified maximum plate dissipation for an KT66. We multiply this by (.7) to assure a safe rating of **70%** of the maximum spec. Or **approx 19 Watts**. We get our B+ value by measuring at the STANDBY switch. Here we have **400V DC**.

The adjusted formula is: **19W / 400V = 47.5mA**. So we want to adjust our output tubes to maximum **47.5 mA** of cathode current at idle. I prefer to stay slightly lower with modern KT66 tubes and opt for **40-45mA**.

C. Thanks to OHMS LAW we can determine cathode current by measuring millivolts across a **1 ohm** resistor between the cathode and ground. As installed in STEP 5. Our reading in millivolts **(mV)** is equal to cathode current in milliamps **(mA)**.

D. With a speaker or load attached and VOLUMEs at "0", power the amp on, turn STANDBY ON as well. Using the millivolt setting, ground your negative meter lead and measure the reading at **pin 8** of each output tube, as shown below. These measurements should be simular, but not identical.

Slowly adjust the bias pot counter-c1ockwise and remeasure until you get in the desired range. In this case, **between 40 and 45mA** is safe operating range. Corresponding to 60-70% of maximum plate dissipation. So adjust until both output tubes are biased within this range.

NOTE:

Bias will drift a bit as tubes break in. You should check bias after a few hours of use.

METROPOULOS AMPLIFICATION

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