Universal Relay Buffer and Bias Mod (URB200BMK) (rev1)

10” black, 20” green, 10” blue wires URB board for AC LV (no series Zener) (2) GDT 230V (2) 5W Zener diode 1N5335B	Heatshrink tubing (2) .001 uF 1kV (2) 1N4001 to 1N4007 diode meter 3M tape

While the URB is readily adapted to the Heathkit SB200, we suggest the following easy fast changes to make SB200 operation better. Amplifier gain will increase, there will be less damage from tube arcs, and IMD (splatter) will decrease. This kit will result in slightly more gain, better stability, less IMD, and less damage from bad tubes. This kit will protect your radio and the amplifier substantially more than the original design.

The resulting relay keying line voltage will be 5-volts positive open circuit, 2.5 volts relay activation threshold, and ~2000 ohms keying loop impedance. The closed-circuit relay loop current is about 5mA. These voltages and currents are almost perfect for reliable safe local relay control by any exciter.
This kit:
1.) Uses a 1N5335B 5W Zener for bias. This stabilizes bias with grid current variations

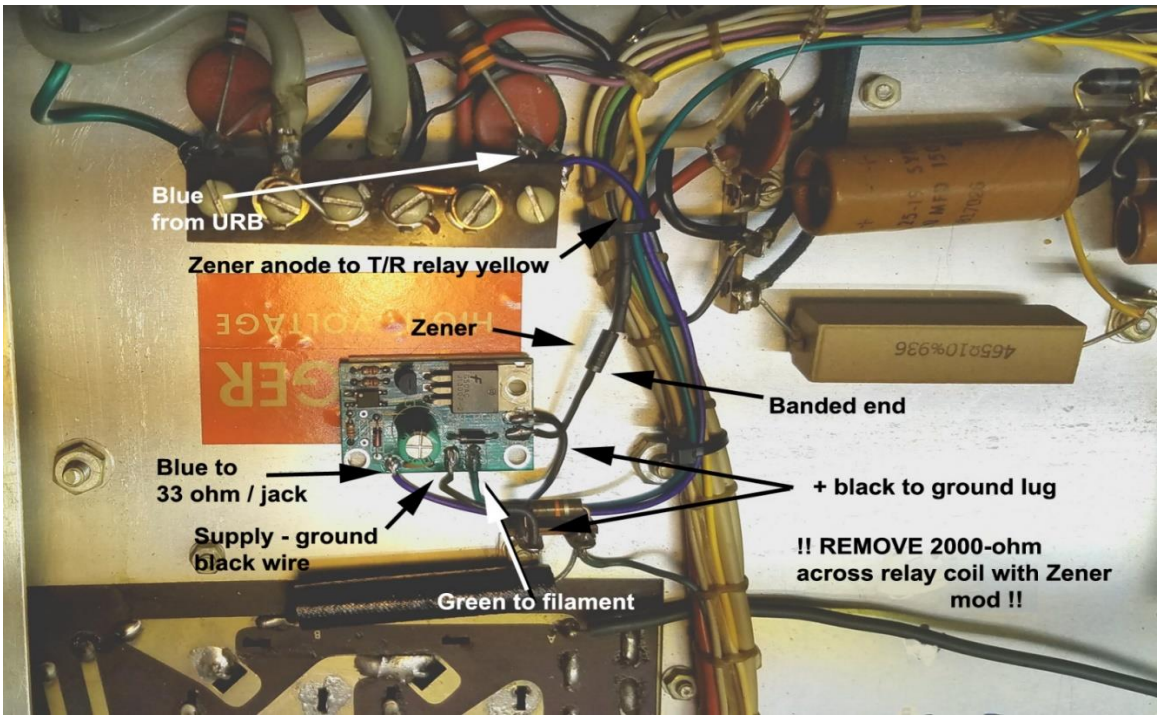
2.) Adds GDT’s from grids to ground. This reduces tube arc damage

3.) Adds .001 disk caps in place of or in addition to the 200pF mica caps on the 572B sockets. This flattens gain across bands

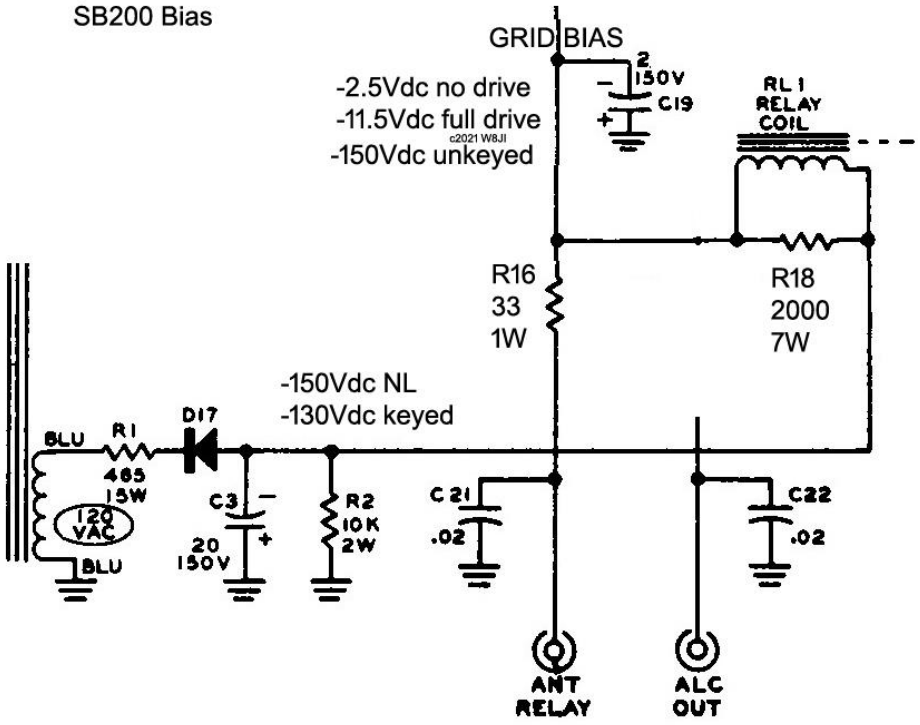
4.) Adds two back-to-back 1N400x diodes across the meter. This protects the difficult to replace meter

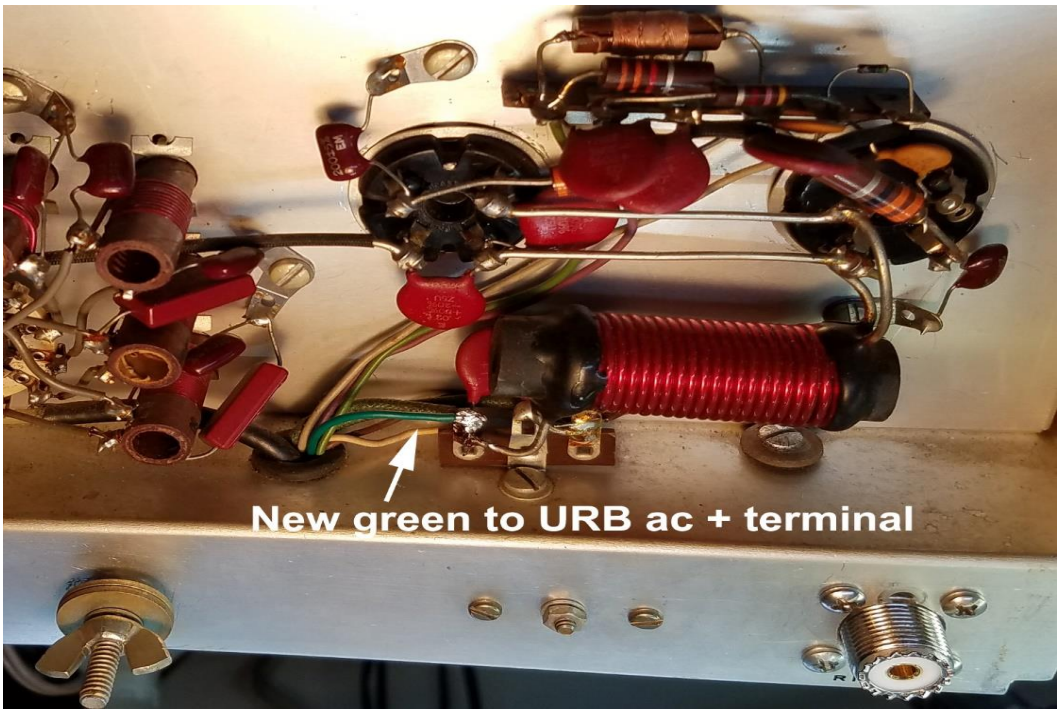
We recommend practicing sweat soldering connections and laying the wires flat on the solder pads. The best way to sweat solder is to pre-tin and leave a little pile of fresh solder on the pads, plus fresh clean solder on tightly twisted hook up wire ends. By doing this, you can “sweat” and flow while holding the wire. The connection should look smooth, shiny, and rounded, and not pull loose.

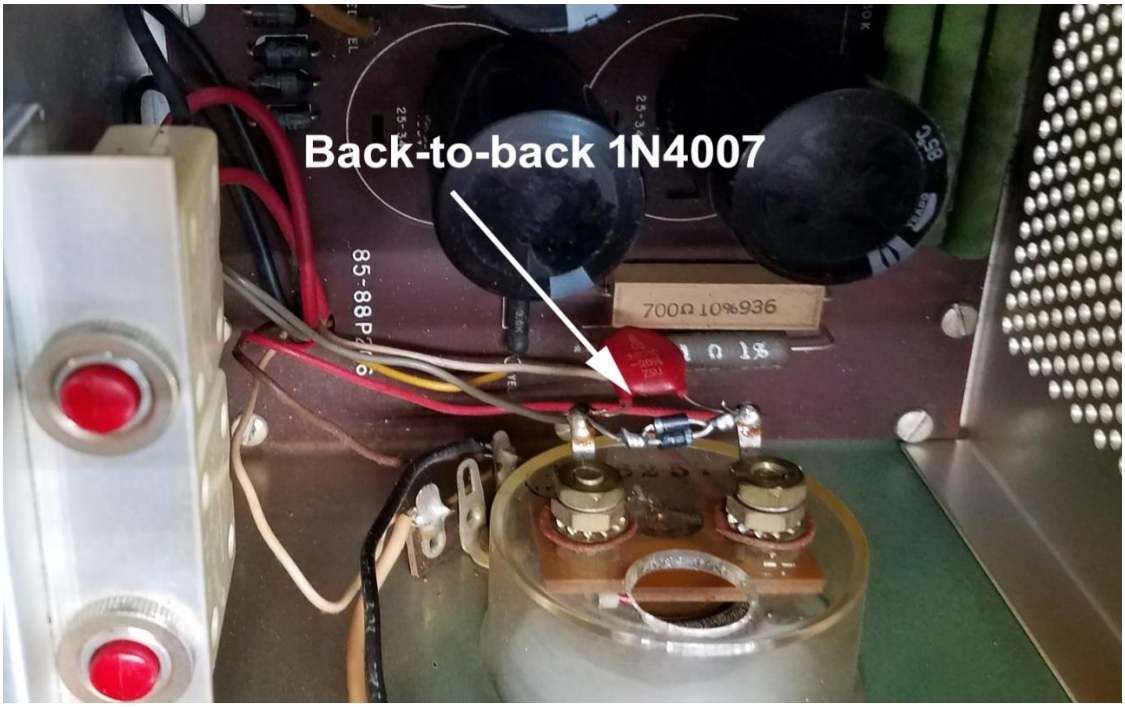
This board is held down by a high-quality reliable 3M tape in these photos. If you wish to mount it with hardware, the transistor flange is at ground potential in the SB200 and other negative keying line amplifiers. Although good 3M tape is almost always adequate and has very long life, any of the mounting holes can be used. Just be careful to not accidentally short any hot traces to chassis ground.

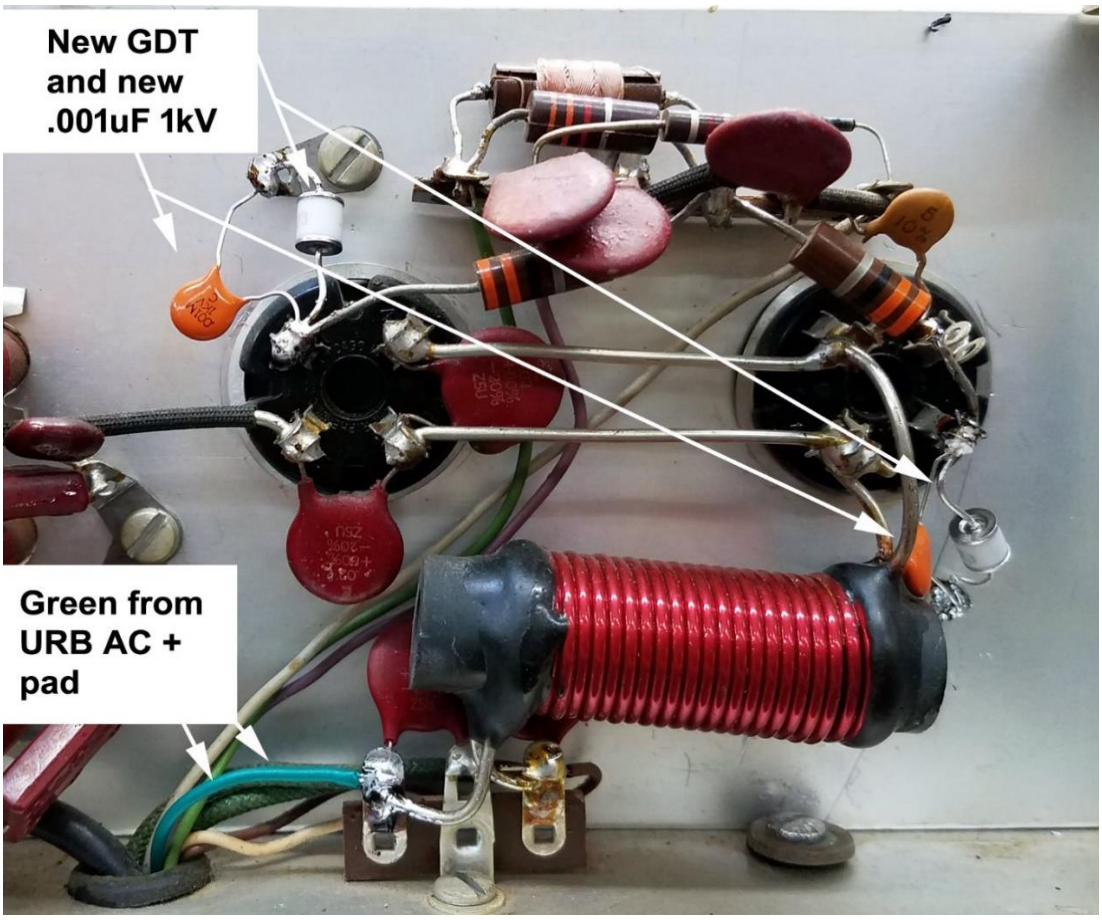


Note: The 2000-ohm resistor can be left in, but it is a pretty low value. While current is only around 60mA, this resistor dissipates 8-watts!




New green to URB ac + terminal


Back-to-back 1N4007


New GDT
and new
.001uF 1kV
Green from
URB AC +
pad