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Improvements to Using the Heath SB-200 Linear on Six Meters

- by Ron Klimas, WZ1V -

2 conversion articles have been written on this topic:

'Six-Meter Conversion of the Heathkit SB200 Linear Amplifier', November 1971 Ham Radio (now defunct). This described converting the SB-200 to a single band amplifier by installing an efficient new 6 meter plate tank coil and tune/load capacitors. No more HF!

'Using the Heath SB-200 Linear on Six Meters', January 1969 QST.

This modification drops 40 Meters and adds 6 Meters, although it would be even easier to drop 10 Meters and add 6 Meters in the same position. I will touch on some improvements to the modified SB-200 described in QST, which I have used on the 6 meter airwaves since 1982. I also use this amplifier on 75 meters.

Right-Click here to save/print the modified schematic (large GIF)

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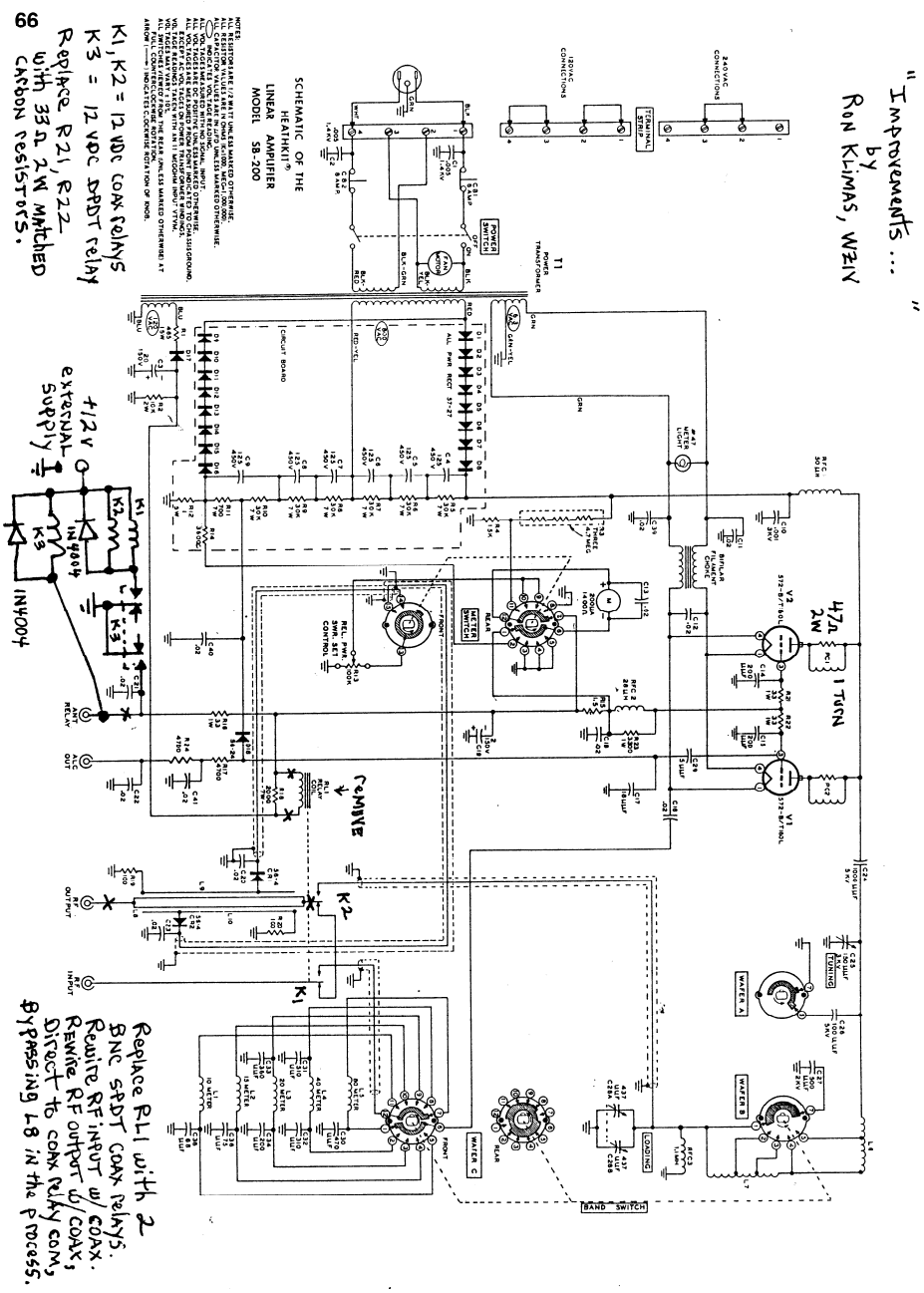

1: The original Plate Tuning capacitor had 11 stator plates meshing with 12 rotor plates. It was easier to remove 4 stator plates so only the middle 7 remain. On L6, the 10 & 15 Meter tank coil, the new 6 Meter tap was added exactly 1 1/4 turns in from the front panel end of the coil. The first turn starts at the bottom of the coil, so the tap should be made on the right while looking at the front of the amplifier.

2: R21 and R22 were replaced with a closely matched pair (same resistance) of 33 ohm 2 Watt Carbon resistors. New parasitic plate suppressors were made from 47 ohm 2 Watt carbon resistors with 1 turn of 1/8" wide copper strips wound around them. Tinned solderwick may be used in place of thin copper strips. The turn is wide-spaced evenly and tightly across the full length of the resistor body.

3: The original T/R relay was quite lossy at 50 MHz. I replaced it with a pair of small BNC-type coaxial SPDT relays. I use one contact on a small 12VDC DPDT relay to key these. The other contact grounds the Antenna relay jack to provide bias for 100 Ma. of plate idling. The RF output connector must be rewired with RG58U (or better yet: RG-142BU) coax directly to the T/R relay common, bypassing the RF pickup coil lines L8, L9, L10, which cause a good amount of loss at 6 Meters. This will eliminate the relative RF / SWR meter function, but the result of this step increased the output power of the amplifier on 6 Meters from 400 watts to 600 watts using the same 80 watts of drive. That's a 50 percent improvement !

Hints and kinks: Make sure R16 is a good 33 ohm resistor. You should have about 100 mA. idling plate current with the amplifier keyed (antenna relay jack grounded) and no drive. Typical operating conditions with a good pair of 572B's is about 600 watts out with 80 watts drive, to a maximum of 750 watts out with 110 watts of drive. I measured input power at 750 watts out as 2400 VDC at 650 mA. = 1560 watts, or about 50 percent efficiency. I recommend operating at no more than 1200 watts input / 600 out and hacking up the case somewhat to mount a 4 " muffin fan above the tubes blowing out. Oil the bottom fan, and replace the HV rectifier stack with 1N4007 or better rectifiers.

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