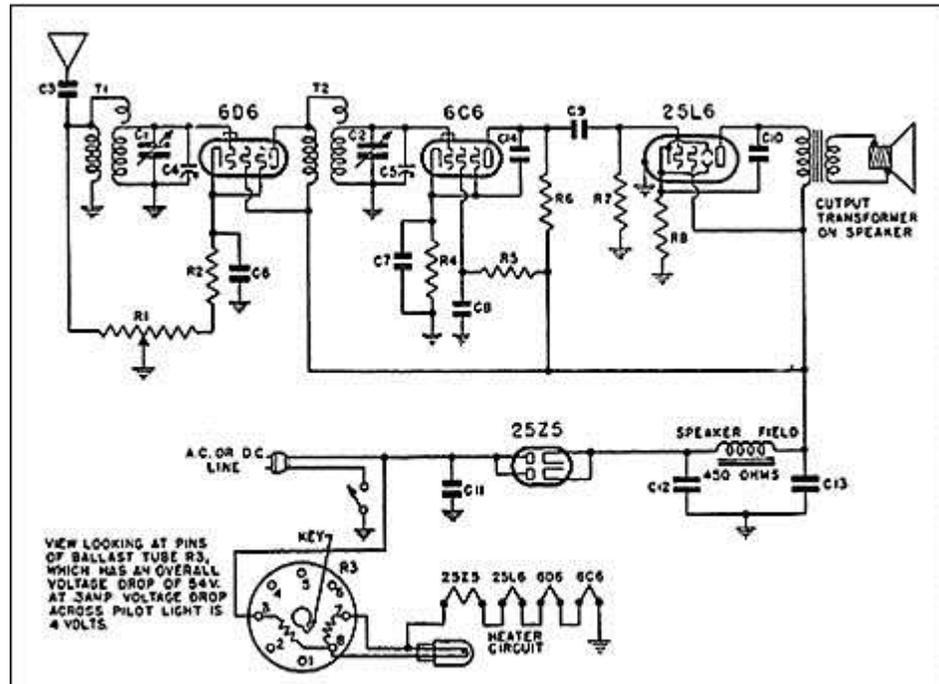


A Structured Approach To Fixing Up Those Nice Old Radios *Repairing a Depression-Era Economy Radio Receiver*

by Bill Fizette, W2DGB
RR1, Box 55
Henryville, PA 18332
E-mail: w2dgb@enter.net

During most of the 1930s our country was very much in the grips of the Great Depression. There was very little free cash around for amenities like radios which, like the Atwater Kent products, had been expensive toys. However, a few manufacturers concluded that the consumer radio-receiver market was ripe for mass-produced low-priced sets, and set their goals accordingly. One company among many was Philco; another was Emerson. The decision proved to be a wise one.

The little set pictured here, a 1938 Emerson Model BA 201, has been in our family since it was bought in 1938, so there is a nostalgia motive for restoring it. The TRF (tuned radio frequency) circuit is simplicity itself, with four tubes, a plug-in ballast



Schematic of the little radio shows extreme simplicity of design.

resistor, seven tubular capacitors and six 1/2 watt resistors. The power is from the AC mains and, as was common in the days before good permanent magnet speakers, the filter circuit used the speaker field as the smoothing choke. One unusual design element is the placement of the volume control in the cathode of the RF tube, a type 6D6. It was common practice in the 20s and early 30s to put the gain control in the early stages, often in the primary of the antenna circuit. By 1938, with the superheterodyne rapidly becoming accepted design, the gain control had been moved to the 2nd detector. However, many little TRF sets like this one

still retained it near the antenna input.

Notice the hank of antenna wire in the picture. Later broadcast sets incorporated a loop antenna on the back of the set to eliminate this inconvenience.

The plug-in ballast "tube" is something we have not discussed in the past. On the schematic, you will note that the Emerson has a transformerless AC-DC circuit, with the tube filaments in series across the AC line. Since the tube filaments added up to 62 volts, a series resistor was required to increase the overall voltage drop to 115 (the nominal line voltage).

In this case the ballast had an overall voltage drop of 54 volts at 0.3 amps. A tap was provided for a pilot light. Remember that the "All American Five" types of tubes, with filaments that added up to 115 volts, were not yet available or were not applicable to these very simple sets.;

Another common means of dropping the line voltage for the filaments of these little radios was to use a "line cord resistor"-- a filament string resistor incorporated into the line cord. More on this another time.



The Emerson BA 201 is an attractive example of a wood-cabinet depression radio.

Inspection revealed that three of the tubular capacitors and the two-section electrolytic had been replaced in the past. No signs of distress such as burned resistors were noted, so using an isolation transformer, the set was powered up very slowly with my VTVM clipped across the B+ line. Repeatedly turning the set on and off over a 15-minute time, and watching the B+ voltage, the electrolytics were

gradually "reformed," until the voltage stabilized at slightly over 100 volts, per the service information. Without fanfare, the radio began to work. There were no signs of hum or other problems, even though most of the original parts were there.

We were fortunate with this service job in that the two components that would be difficult to replace: the speaker with the 450-ohm field coil, and the ballast tube, were still good. (There are ways to take care of these problems, but we will hold off discussion until the need arises.) The pilot lamp remained dark, and it proved too difficult to remove it without damaging the socket. Since it wasn't a significant part of the filament circuit, I left it alone. Finally, I touched up the RF alignment, even though it didn't really need to be done.

These little-mass market sets did much to encourage the growth of "radio" during the 1930s. With the international scene deteriorating towards a major world war, they at last provided a means for the lower-income households to hear the news,

weather reports, and the fascinating entertainment offerings. The sets were reliable and could be serviced easily.

In due course many of these little AC-DC "cheapies" were designed with extra bands so that listeners could tune in on international short wave broadcasts. With the depression and a looming major war as a backdrop, along with the rapid growth of radio and aeronautics technologies, this was both a difficult and an exciting time to be alive!