

# RESTORATING THE ALL AMERICAN FIVE

Jim McDowell

The All American Five tube radio is the most common radio design. This design became popular in the early 30s and lasted until tubes phased out. This circuit is the most widely used circuit in radio history, used in Catalins, Bakelites, and Wooden sets, as well as all kinds of novelty radios.

The diagram we will use for reference purposes is a GE No. HJS14 in Riders No. 11, page 11-52 GE. To service this type of radio is not difficult. First, test all of the tubes and replace any weak or dead ones. Next, replace certain key capacitors. The first one is C16 across the A/C line. This capacitor filters out RF signals from coming up the line into the radio, which would result in static and noise entering the radio. The second capacitor is C15. This is known as the tone capacitor. If it opens the radio will sound very tinny and it may howl. If it shorts, the 3525 will glow brightly and burn out.

The third capacitor is C13. This couples the first audio stage with the audio output stage. If it fails, the sound will be very distorted. Now let's replace the filter capacitors, otherwise known as electrolytic capacitors, C17a and C17b. This is one unit but we will replace it by two individual new style units. We will use 100 mFd at 160 volts units because they will eliminate all hum and are readily available. Some sets use a third electrolytic. Replace this one with the abovercommended new style filter capacitor also. Be sure to observe the positive-negative polarity of the electrolytic capacitors.

Now spray the volume control with TV tuner spray as well as any other controls. We will next turn to the antenna. Most of the all American five sets use a loop antenna (a coil of wire usually mounted on the back). If your set uses this, check the wires connecting it to the radio. If one is loose and you do not know where it goes, look at the tuning capacitor, which used to be called the tuning condenser. One wire belongs on the terminal of the large section of the capacitor. The other wire connects to the automatic volume control (AVC) circuit. To find this circuit

look for resistor R2 coming off the volume control and capacitor C10. Connect the other loop wire here. The capacitors C15, C16, C13, will be marked with their values on them, such as: .01 at 200 volts. You can replace these with a higher voltage unit but never use a lower voltage replacement because it may short out. Always replace C16 across the A/C line with a 600 volt unit.

In some cases, the AVC capacitor C10 may need replacing. If so, the set will motorboat and howl while tuning. Post-war Zenith radios and some other makes use ceramic disk capacitors. If your set uses these, the only capacitor you will need to replace is the A/C line filter. Capacitors like C4 and C20 are in the RF stages and are usually ceramic. If you try to replace them, you may never get your radio to work. The All American Five is a very reliable circuit but here are some tips to make it perform better. With the chassis out of the cabinet, and the knobs on and the loop antenna standing at normal position, turn on the set. Let it warm up for 15 minutes. Tune to a station on the lower end of the dial. Now adjust the four screw adjustments on the IF transformers for the most volume. Now tune to a station around 1400 kHz, and adjust the antenna trimmer, sometimes found on the loop antenna, or on the large section of the tuning capacitor. This adjustment affects the high end of the tuning range greatly. Be sure to use a plastic screwdriver, because these adjustments may shock you if the IF cans are "hot." Also, use plastic because a metal screddriver will detune the circuit.

Some of these radios have a metal cabinet. If so, use a three wire cord and ground the center wire to the cabinet, or mail the radio anonymously to a relative you hate! To connect an antenna to a hot-chassis set such as this, wrap an insulated wire around the wire coming from the tuning capacitor to the loop. Connect it to the antenna. If you connect the antenna directly you may be sending line voltage up your antenna. Remember: Safety First! is the CHRS AC-DC motto. — Good luck.

MODEL HJ514

GENERAL ELECTRIC CO.

