

Repairing an L40S

Resistance Voltage Dropping

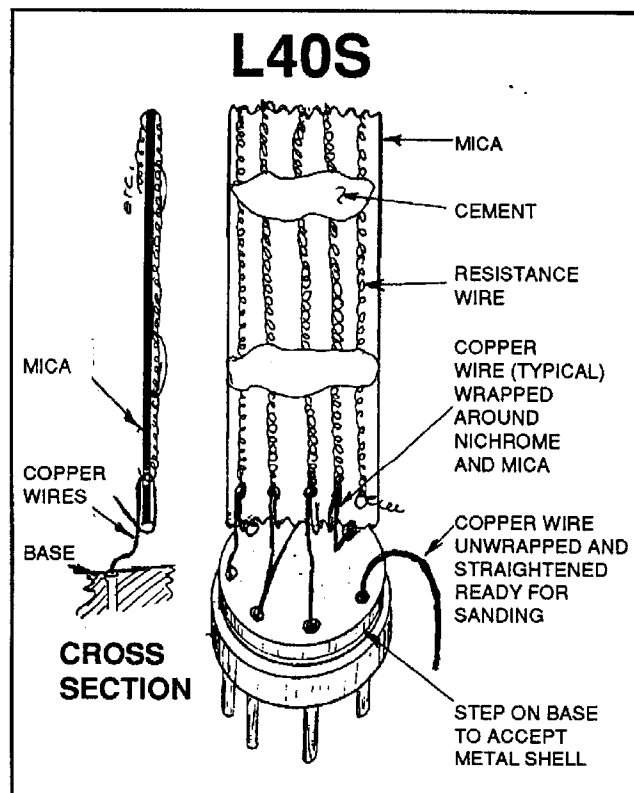
Starting in the early thirties a number of table model radio sets were starting to be manufactured that had no filament transformer, and for that matter, no transformer for an isolated plate supply. As the depression set in it became more obvious that if large numbers of people were to afford radios, the cost must be cut. The transformer was the perfect answer and in addition its elimination cut the shipping weight. The tube filaments were hooked in series. Special tubes were made that had voltages higher than 6.3 and these helped but this still added up to only about 80 volts - too low for 110. So special dropping resistors were used, sometimes in line cords, sometimes in nichrome wire "light up" units, and some as large resistors.

The current draw through each tube and the resistance unit is .300 amperes. This times 110 volts gives 33 watts as total power consumption.

Recently I acquired a late 1930's radio in sorry shape, of transformerless design - series tube and dropping resistor - with what would likely be a beautiful mahogany case sporting a large five and a half inch airplane type dial with a sailing ship in the middle and showing broadcast and two shortwave bands. Cost was \$20. Amazingly all the tubes tested good but would not light up. This left only the switch, and most likely, the resistance plug-in unit which was very "open".

Upon prying off the perforated (for ventilation) metal can, one could see a mica board and lots of resistance wire. (See illustration) The connection from the resistance wire to the pins on the base was a copper wire, badly corroded green, with the resistance wire wrapped around it then the copper was threaded through the holes in the mica. Frankly, the job looked impossible and I could see having to calculate the resistance and substituting a twenty watt or more resistor. After thinking about it for awhile I realized I had nothing to lose, so with tweezers in hand I found, much to my surprise, that the copper could readily be moved and unwound from the mica, still green in color. Some 240 sandpaper removed this corrosion and I was able to re-wrap the wire to its original location. It was then crimped very carefully so as not to break the mica.

It tested ok and did indeed work in the circuit. When turned on it lights dull red for a second saving the tube and starting



current shock then dims out to no glow. There is one small spot that remains lit near the top. This is where the wire has either been nicked or is thin. If and when this opens I will pry the cover off and connect the two ends with the same diameter copper wire used in the base. The loss of resistance will be negligible. So far it has lasted many, many hours.

My suggestion to anyone having this problem is to go ahead and try to fix their resistance unit, as the resistance wire, probably nichrome, is very flexible and it keeps the unit original and helps save the tubes. Best of luck! James C. Newton, Williams, OR 97544.

