



Broadcast News

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PRESIDENT'S PAGE

By Jim Collings

First in radio on everyone's mind should be preparation for this year's annual spring meet. It's at the Midwest City Community Center on April 9th, beginning at 8AM, and ending at noon. Let's talk this up so that we have great attendance and thus a fun time. We will have a contest, swap meet, silent auction, and live auction. I've listed the contest categories elsewhere in this addition of the Broadcast News.

This month's meeting topic continues our theme of manufacturer's or brand names for letters of the alphabet. We left off with L last time, so this month let's bring sets with M. That would include Majestic, Marvel, MESCO, Michigan, Mengel, Miraco, Musicmaster, and Murdock. I don't think we need another letter, as there are a lot of choices here. The meeting will be on Saturday March 12th at the Hometown Buffet on NW Expressway, beginning at 7 PM with dinner before, generally about 6 PM. We will be finalizing plans for our big April meet, and will especially need help with publicity. Don't forget to bring something for the donation auction.

AS far as upcoming events, the VRPS is having their Spring auction on March 19th. It will be held in Irving, TX. at one of the City building associated with the Irving Garden Center, a change from last year. I believe the start time is 9:30 AM. It is an auction only, but is worth attending. It's not as big as the fall convention auctions, but there are always some good items as well as restoration parts available. Contact me for more details.

See you at the Hometown Buffet on March 12th for the M displays. Don't forget to bring your ideas for our big meet, and items for the donation auction. Our donations have been very good recently, and they make the meeting more fun.

Contest categories for the 2011 Annual Spring Meet:

1. Battery and Crystal Receivers, 3 tubes or less, Pre-1930
2. Battery Receivers, 4 tubes or more, Pre 1930
3. Tombstone and Cathedral Receivers
4. Horizontal Wooden Receivers
5. Metal Sets after 1926 (includes amateur receivers and transmitters)

6. AC/DC Bakelite or Plastic Receivers
7. Transistor Radios
8. Console Receivers (includes radio/phono combos and televisions)
9. Art Deco and Novelty AC operated Receivers
10. Foreign Made Receivers and Equipment, pre 1957.
11. Homebrew and Kit Receivers
12. Accessory Items (tubes, speakers, antennas, test equipment, etc.)
13. Console receivers, including Televisions
14. Open Category (anything that doesn't fit in another category)
15. Best Restoration (this can be displayed in any category, but will be judged on restoration quality. Documentation of condition before restoration is encouraged.)
16. People's Choice (ballot of favorite display of all who attend)
17. Best of Show (one of the first place winners from the other categories)

Report for the OKVRC Meeting of February 12th 2011

Happy New Valentine's Day! With that special day just two days away, many OKVRC members brought their significant others with them as about twenty club members met for our regular monthly meeting at the Home Town Buffet in Oklahoma City. Oklahoma City is warming up after two weeks with some record snowfalls; everyone was ready to get out! Guests began arriving around 6:00 PM for dinner, and as always, we all had more than enough to eat.

At 7:00 Club President Jim Collings called the meeting to order. Jim told us of some upcoming radio events, and reminded us that the Spring OKVRC Convention and Swap meet is only two months away. This is our biggest event of the year, since we will have, in addition to the swap meet and the silent and regular auctions, a contest with awards in a wide range of categories. So, why not look for that special item in your collection to exhibit in the auction? And while you are at it, rustle up some items to sell? It seems demand exceeds supply for nice sets at our conventions, so if you bring some nice things to sell, you might get top dollar. And invite any of your friends interested in vintage electronics to come as well. With admission free, how can they lose?

In the spirit of Valentine's Day, tonight's topic was red radios. Also, ladies were invited to talk about their favorite sets. Julie Collings started out by describing her favorite set, a 1923 Deforest D10. This is no run-of-the-mill twenties radio. It is a most unusual design, a four tube reflex circuit, with a crystal detector and plug in coils. It is housed in an attractive small cabinet that looks like a spice chest, except for the large loop antenna on top. The period advertising from Deforest suggests that owners going camping could fold up the loop antenna, stow everything in their canoes, and take the radio with them on a wilderness trip. Somehow it would seem a bit reckless to throw a \$125.00 radio (less horn and batteries, in 1923 dollars!) into a canoe just for the thrill of hearing a radio broadcast from your tent in the North Woods. Better avoid any whitewater, at least!

After seeing Jim and Julie's Deforest, we moved on to red radios. Mike Swinney showed a Truetone model D-2214A sold by Western Auto. Mike received this red beauty, gratis, from a friend who worked for Western Auto decades ago. I remember going with my Dad to Western Auto when I was a boy. Does anyone know what happened to them? Did they go broke like Montgomery Ward's and the companies that made most of the radios we collect? It seems so many things fade away and we

don't miss them until they have been gone for years. Roger Knop brought in several red radios to show, including a red Coca-Cola cooler radio. It's a contemporary reproduction (like the "Crosley" tabletop jukebox radio in my kitchen) but hey, they are still fun to have and also receive FM and play cassettes, something the originals could never do. Roger also shared a "mystery" large red table radio with a yellow stripe, possibly a Willowrock. He also showed us an attractive red Sears Silverstone from the nineteen forties.

Bill Jones displayed a red Crosley table radio from 1939. The plastic cabinet was in four pieces when Bill acquired it; he has restored it to like-new condition. This is one of the desirable Crosley models that has the push buttons on the top of the cabinet. Jim Collings finished up our red items with a vintage Shure studio microphone. No, it isn't red, but it comes with its original red velvet bag. Chuck DePaepe explained the difference between several different types of Shure microphones for us.

We finished up the evening with the usual donation auction. Lots of good stuff up for grabs, most went for a buck or two, or even several items for a buck. Two items brought good prices, an excellent microphone and a Satchel-Carlson "frog eye" radio. Also sold, lots of test equipment, including a TV sweep generator, an audio generator, a Sencor resistor / capacitor substitution box, two RCA Voltohmmeters, several VOMs and VTVMs, and assorted meters. Also several transistor radios, at least one working, a big twenties battery set cabinet, an amplifier in a wood case, a "Route 66" clock, an intercom panel with a clock, speaker, and radio, a clock radio, a big Air Chief radio from the forties, several power supplies, a tray of coils and chokes, transformers, an amplifier chassis out of a Zenith, a dwell meter, and lots of assorted parts. See you next month!





Replacing Defective Resistance Line Cords

From Colorado Radio Collector's "The *Flash!!*"

Larry Weide

4/93



Hi...all you CRCers! This month I'd like to write about a subject that will likely be of interest to collectors who restore low end 1930 radios - the substitution for defective resistance line cords. To begin with, I want to thank Dick Hagrman and his brother Ray for much of the information in this article. In particular, I want to thank them for all the empirical work they did to distill their substitution technique down to a simple procedure and a few component values.

During the 2nd decade of commercially available radios the cost of owning a receiver began to drop dramatically. One reason of course was that by the beginning of the "Thirties" mass production and volume selling was in full swing. At the same time however, cheaper methods of construction were also being implemented. One of these cost reduction methods was the elimination of the AC power transformer - the most expensive, largest and heaviest component on a radio chassis.

Most of us are familiar with the common method of transformer-less operation. The B+, or "plate" voltage is derived directly from the rectified and filtered AC line voltage. At the same time, the filaments of the tubes are supplied with the proper voltage by placing them in series with the input AC line voltage. It turns out however that, during the early years of this filament supply technique, the available tubes, setup in typical arrangements, could not by themselves handle the entire AC input line voltage. Examine Fig. 1 to see how the tube filaments were arranged with a resistor to properly distribute the voltage among the tubes.

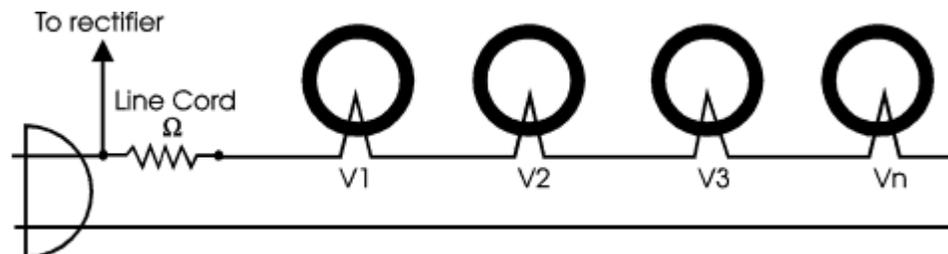


Figure 1

The resistance value of each tube filament, and of the resistor, are designed such that each tube gets it's proper voltage and the resistor gets what is left. The total voltage IS the value of the input AC line voltage. Of course, all of this is under the control of good 'ole Ohms Law.

Until newer tube types became available, and eliminated the need for the series resistor, this system worked pretty well except for one thing - the resistance component dissipated a lot of heat. There were two common solutions to this problem. The more expensive method was to place the resistor in an electron tube style plugable container known as a ballast tube. This "tube", though it got quite hot, was mounted above the chassis and away from most of the other components. The cheaper method was to use a resistance line cord. This cord looked like any other cloth covered AC line cord of it's time, but it also contained a third conductor that was actually a resistive wire (like nichrome) that acted as the required resistor for this type of radio.

There were a few radios of the day that did use a voltage dropping resistor that were typically placed under the chassis near ventilating holes. Even some "modern" tube radios used dropping resistors - particularly where pilot lamp voltage was otherwise hard to create.

The advantage of the voltage dropping line cord was that it would dissipate the generated heat outside of the radio cabinet and eliminated one more component to mount inside the radio. Alas, it had a major disadvantage. These line cords didn't last long due to the effects of heat on the rubber insulation. In fact, it is rare to find any of these cords in good shape today - even unused ones. Since frayed and defective cords of this type are VERY dangerous you will not find them being newly manufactured.

The usual method of repair is to replace the old resistance line cord with a conventional two conductor one and a suitably sized resistor. This method certainly works but it puts us back to square one in terms of the troublesome heat dissipation. Then there's also the problem of where to safely mount a power resistor inside a cabinet not designed for such things.

There is another way!

Simply put, we can substitute the voltage dropping resistor directly with a capacitor. Using Fig 2 let's take a look at how this technique works.

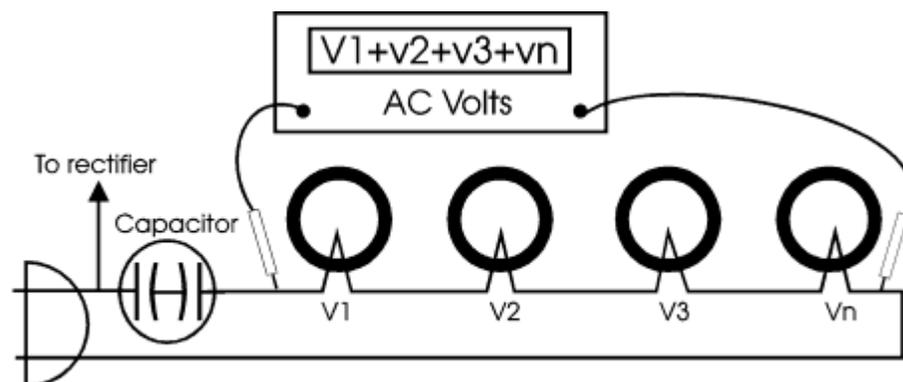


Figure 2

As the input AC current passes through the tube filaments it charges the capacitor, first in one direction then the other. The rate of this charging, and the average value of the resulting current flow, is in direct relationship to the filament resistances and the capacitor value. As mentioned above, the voltage across each tube would be calculated with Ohm's Law as: tube VOLTAGE = capacitor CURRENT times filament RESISTANCE. Since the trick is to calculate the size of the capacitor for a particular tube lineup (not hard but tedious), we tip our hat to the Hagrman brothers for providing us both specific part values and testing information.

The capacitor must be a special type. It's a non-polarized electrolytic. It's non-polarized to handle the AC current, and electrolytic because of the relatively high capacitance value required. Although it's technically possible to use back to back electrolytics in this service, Dick says that experience shows the ready made non-polarized capacitor is the most reliable type.

In the case where your radio has a tube lineup whose total filament voltage doesn't match one in Fig. A, we suggest you use the following testing and capacitor value locating procedure;

1. Install what you believe to be a suitable size trial capacitor. Remember, this capacitor directly replaces the line cord resistor.

In many cases the line cord resistor had a low resistance tap that was used as a shunt for a pilot lamp. If your set had such a cord, you will need to replace this shunt resistance with a 5 watt resistor whose value can be found in your radio's documentation, or you can select a cord resistance from Fig. 4, then go to Fig. 5 to find the closest tap value.

2. Attach an AC voltmeter to span the entire filament string as shown in Fig 2.

YOU MUST NEVER LET THIS VOLTAGE RISE ABOVE THE SUM OF THE CORRECT VOLTAGE FOR ALL THE TUBE FILAMENTS OR TUBE DAMAGE MAY RESULT!

3. Using the proper SAFETY precautions, plug your radio into power through a Variac or similar voltage adjusting device.
4. Carefully monitor the voltage in step B as you SLOWLY bring the Variac output voltage up towards the AC input line voltage.

* If the voltage in step B reaches the total filament voltage BEFORE the Variac output voltage reaches the line voltage, then the capacitor is too big - too much current.

* If the voltage in step B is low when the Variac voltage has reached the input line voltage, then the capacitor is too small - too little current.

5. Repeat the above procedure, using different capacitor combinations, until your results (the total filament voltage being measured in step 2 is within +/- 10% of the desired value.

Naturally, you're going to have to find a place to install the capacitor. However, since it runs quite cool, you can mount it anywhere where there's room AND safe access to the AC line. Below you will find a source that Dick has used for his capacitors. The ones that Dick found have the advantage of being fairly small, have axial leads and are shrouded in insulating plastic. The alternative to this capacitor is the AC motor start capacitor. This type is much easier to find, but they're likely to be larger. Again, it is possible to use back-to-back electrolytics, but be VERY careful of observing for situations such as overheating of the capacitors.

By-the-way, this technique works equally as well for defective ballast tubes that can't be replaced (I have however found exact replacements at Antique Supply in Tempe). Once again, you may have to deal with a pilot light shunt in this device as well.

Hagrman Derived Capacitor Values for Common Tube Filament Voltage combinations

Total Filament Voltage	Calculated Capacitor Value
24 Volts	7.2 μ fd
68 Volts	10.0 μ fd

Figure A

Line Cord Resistance Values for Specific Tube Lineups

Note: n (6.3 V.) = quantity of 6.3 volt tubes in radio

Resistance	Tube Lineup
135 Ohms	25Z5, 43, 4 (6.3 V.)
160 Ohms	25Z5, 43, 3 (6.3 V.)
180 Ohms	12Z3, 43, 4 (6.3 V.)
200 Ohms	25Z5, 43, 2 (6.3 V.)
220 Ohms	12Z5, 43, 3 (6.3 V.)
250 Ohms	12Z3, 43, 2 (6.3 V.) 25Z5, 3 (6.3V)
290 Ohms	12Z3, 3 (6.3 V.)
300 Ohms	12Z3, 3 (6.3 V.)
330 Ohms	12Z3, 2 (6.3 V.) 4 (6.3 V.)
350 Ohms	12Z3, 1 (6.3 V.) 3 (6.3 V.)
390 Ohms	2 (6.3 V.)

Figure 4

Common Values for Tapped Resistance Line Cords

Total Resistance	Tapped Resistance
160 Ohms	24 Ohms
165	30
180	25
200	25
200	40
280	40
360	80
430	80
510	80
560	80
960	80
1950	360

Figure 5

The Oklahoma Vintage Radio Collectors (OKVRC) publishes the Broadcast News monthly for the presentation of historical information and enjoyment of club members and friends. Articles on subjects of interest to radio collectors, news of club activities, and restoration information are always welcome. Articles should be sent to the Broadcast News Editor, c/o OKVRC, PO BOX 50625, Midwest City, OK 73140-5625 or e-mailed RXRADIO@AOL.COM. Unless otherwise noted, articles can be reprinted freely, as long as proper credit and reference is given. Electronic copy of articles can be obtained from the editor of Broadcast News.

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- WANTED:** Dial bezel and dial pointer for a E. H. Scott Receiver, Model SLR-H or Navy RBO-2. Also, need metal Identification plate for a Navy RBO-2 receiver. Contact Tom Laszynski at either k8jrm@arrl.net or 405.741.1176.
- WANTED:** Briggs & Stratton (BASCO) radio items: Crystal radio, tube sockets, A-B-C power supplies, boxed parts, radio advertising and promotional items. Dale Boyce (414)353-0734 or radian@wi.rr.com
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