Mercury Super Ten (1926)

The H. M. Kipp Co. Ltd. – Toronto – Canada

From the collection of: Robert Lozier – Monroe, NC, 28112

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Narrative of bringing this receiver to its current state of repair.

I had been aware of the Canadian manufactured radios that were licensed to use the Western Electric/Northern Electric Type 215-A low voltage filament receiving tubes. These tubes had never been licensed for use in American made broadcast receivers for the home market. It was not until the mid-1990s that I finally had enough fun money to allocate $500 to acquire this receiver. When acquired, the cabinet had been stripped of its original finish and seemed to have some sort of peculiar dull coating; but I was happy to see that it had all ten Type 215A tubes in place. The chassis was very dirty, but I presumed I could clean it up OK…. The 7-circuit battery power cable terminated in a male Jones Plug was with the set but in terrible condition and missing its Bakelite plug shell entirely.

Over the years I hoped that I could locate a replacement Jones plug but none ever came my way. In 2015, I acquired a Zenith 3R radio in very poor condition but decided to restore it mainly as a challenge to showcase my restoration skills. It

too uses the same Jones Plug for battery connections. I determined that an attempt at this receiver restoration was futile unless I could solve the Jones Plug problem. I was eventually able to figure a way to make seven convincing plug replicas with my available home shop tools and skills.

Fast forward to 2018…. Since I had solved the Jones Plug issue to my satisfaction on the Zenith project, I thought it time to take-on this Mercury Super Ten. I was really interested in getting this receiver up and running in order to witness the operation of the push-pull 215A audio output stage. And so, I began with the Mercury by attempting to complete work on the stripped cabinet.

This cabinet is the simplest construction used on any Mercury receivers. The material is solid lumber most likely furniture grade Birch. It is stained brown mahogany and finished in shellac with a French polish. I mentioned a strange residue on the otherwise stripped cabinet…. Maybe it was just remains of old stripper; I don't know. Fortunately, the back and sides are held to the base only by four, long, square drive flat head furniture screws; so, the pieces were convenient to separate and work on. I had to use a strong stripper with MEK to get down to clean wood. I did not want to do heavy sanding on the cabinet… Just enough to get a smooth finish. The wood then accepted alcohol based aniline wood dye with little trouble. This was followed by multiple coats of clear sprayed shellac. Unfortunately, I did the work in very cold weather and there is noticeable 'orange peel' especially on the top. Because of the cold weather I could not get the shellac to harden enough for proper sanding. I set the cabinet aside for six months.

In late summer of 2018 just before shoulder surgery, I did some sanding to try and cut-down the orange peel on top and proceeded to French polish the cabinet. The base came out better than the top, but for now, this is as far as I plan to go. After the polishing, you get a very glossy finish that must be toned down with a rub-out of very fine rotten stone applied to a soft pad saturated in light mineral oil.

The Chassis restoration….

I had never looked closely at the dirty chassis just presuming there were not any serious 'gotchas'. I was WRONG! Buried under the Oscillator and Tuner variable condensers (capacitors) are two *Splitdorf* brand B+ bypass condensers. Apparently, water had somehow condensed under these parts big time over the years and one sheet metal case was now destroyed and the other case was not much better. Finding good exact replacements are unlikely so I set to work recreating these tin cans and their destroyed labels. The cans were originally die-stamped and had tiny rolled flanges to capture Micarta end caps. (Micarta is a trade name for sheet goods built of layers of linen saturated with phenolic resin much as fiberglass printed circuit board G10 material is made now.) I could salvage the old end caps, but it turns out that this tin can with its rolled ends and tiny tabs to capture the end caps was, for me, a very tedious and less than perfect task with the tools at hand.

Both capacitor internals were shorted and were discarded and replaced with modern film capacitors inside my reproduction cans. This was done because no space could be found to hide modern parts elsewhere. With my experience in recreating the graphics for radio batteries, I had no difficulty in scanning the paper label for the units and recreating an exact graphic for printing.

This radio has audio transformers that are certainly made by Thordarson even though there is no such attribution. The Thoardarson transformers I have encountered are most often OK and the ones that do test bad have a fair number of them that register open circuit but can be repaired. With care the case can be opened, and I have found that the #8 threaded studs going through fiber insulators can rust heavily and effectively disconnect the solder lug where the winding leading-out strap is soldered. That was true on two of the three audio transformers in this radio. After removing the rust with a clockmakers glass fiber scratch brush and reassembly they now test fine.

Figure 2 - Solder lug disconnected by rusting of #8 stud.

Figure 1- Rusted case requiring repaint but actual windings are still OK.

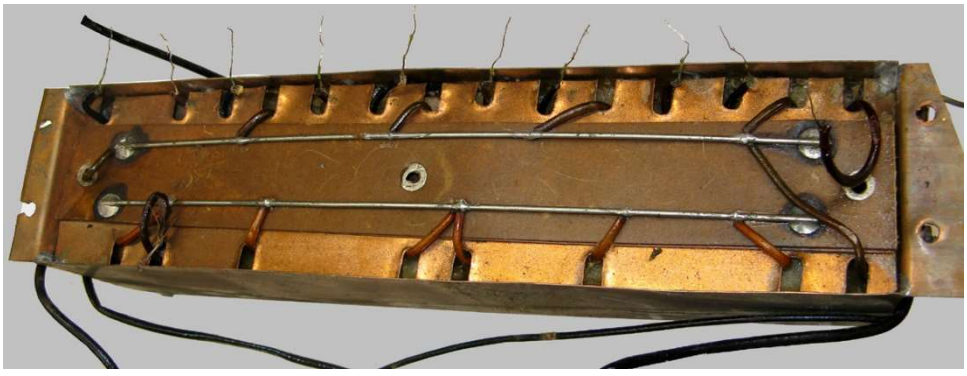
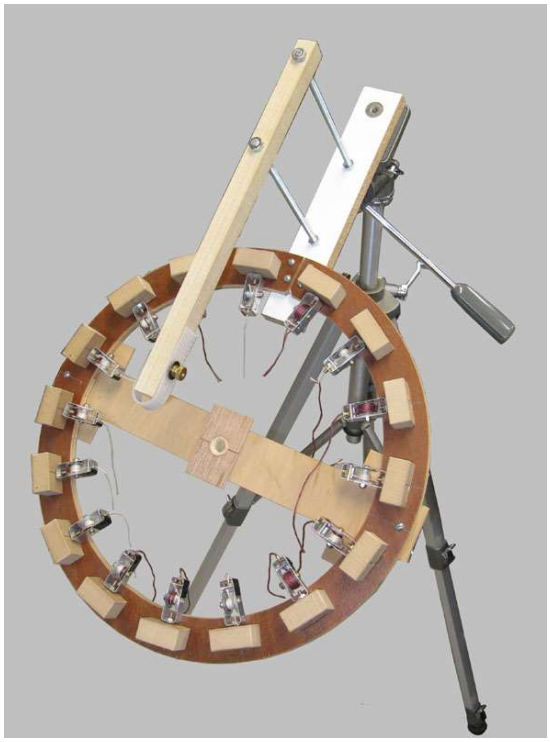


Figure 3 - Catacomb is potted with bees wax just like the RCA Radiolas. Since circuit resistances were good, I had no cause to risk opening for photographs. I've found no such photos on the Web.

To properly clean the chassis, I had to remove the superhet 'catacomb' (intermediate frequency amplifier) module. I found no problems with circuit continuity and replaced the unit after everything else had been cleaned. I've not found pictures of the guts of the catacomb to see how construction would differ from RCA Radiola designs.

I turned to making a replica battery cable using the same braiding fixture I designed to make two other replica battery cables. A detailed article on this braiding fixture appeared in the Summer 2019 issue of the *BVWS Bulletin* (UK). The heavily deteriorated cable that came with my radio had black rubber covered wires with a black over-braid jacket for the bundle of wires. I was having trouble finding a black stranded wire that looked anywhere near that in my useless cable. The answer came when I discovered that there is silicone rubber covered high flexibility wire rated for 200 C. It carries a designator of UL-3135. And I was happy to find that you can buy 30-meter lengths of 18 and 16 AWG in colors including Black on eBay for about $38 post-paid. More than enough to make my replica cable.

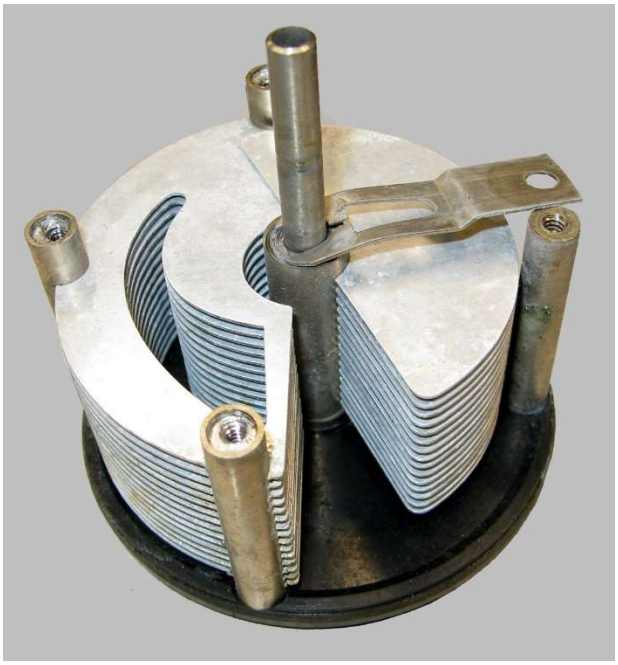


I have seen three different Jones Plug battery cable assemblies with different wire inside the braided outer jacket. One has the plain black rubber covered wire, another has thinner black rubber covered wire with an individual black braid over the wire and the third cable has the same thinner black rubber covered wire, but the wires have different color braiding. To make things even more confusing, the wires are tagged differently. One with printed cloth tags, another with Celluloid tags, another with individual, postage stamp sized string tags and if that were not enough, one of the cables even has ends of the plain rubber covered wires covered for about 3" with a different colored varnish! The replica cable I made is tagged with vintage crimp-on metal tags at least until I obtain further documentation on cables appearing on 1926 model Mercury receivers.

This version of the Mercury has tube sockets that have a Bakelite base with insert molded nickel-plated brass tube base sleeves. I noted that two of the slotted machine screws to fix the bases to the Bakelite panel had heads slightly larger than the molded recess base mounting hole… The installer drove the screws in anyway resulting in single line cracks through the Bakelite. (So much for careful assembly eh?)

While I had the chassis completely disassembled for cleaning as mentioned earlier, I made resistance checks of the catacomb IF amplifier assembly. Like the RCA Radiola catacombs, they are potted in bees wax. I really did not want to disturb the wiring and fortunately I could measure credible circuit resistances through the various paths. Unfortunately, when I had fully re-assembled the receiver and prepared for powering-up for the first time, I discovered that the '-C' Bias connection to the common of all the IF tube grids was OPEN! %$#@. You must almost totally disassemble the chassis to remove the catacomb and then begin the long task of melting-out the bee wax in order to find the open circuit. This I have not done… Even with the -C Bias connection Open (30 to 50 Meg. Ohms), the radio does indeed work just fine at least on the local stations and there is fair DX at night. But I don't have any first-hand experience of how the radio might perform if that 'C' bias were properly adjusted for various reception conditions.

There is still one possible feature missing from this restoration. Some photographs show that there is a Celluloid dust shield around the Oscillator and Tuning condensers. It would be easy to presume that these dust shields could just crumble over time. But I don't have any reference material to say that my exact version of their set does have dust covers.



On cleaning these tuning condensers, I discovered a clever design feature. If you look at the vanes of the condenser casually, you would think that tuning variation presents straight-line capacity; meaning that with the vanes meshed 20 of 180 degrees rotation, the capacity would be about 11% and with the

vanes meshed 90 of the 180 degrees would give you 50% capacity. But this is not the case.

Closer inspection of the stator vanes show that the middle of the stator vane has an arced wedge die punched out of each vane. This results in a variable straight-line frequency (SLF) tuning characteristic so that the stations don't appear to be so crowded at the top of the broadcast band. This technique to provide a SLF tuning experience results in a tuning condenser requiring a smaller panel footprint and radius of swing for the rotating vanes.

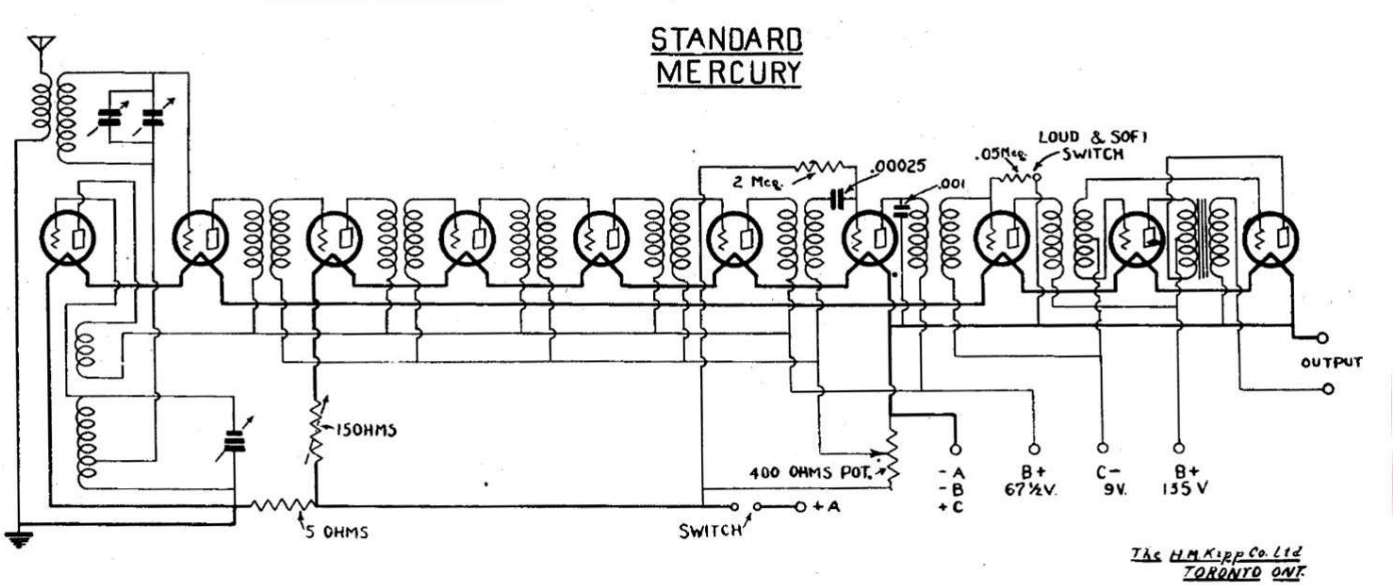
Two things do not make sense to me. One is the fact that the wires for the "C" Bias battery which may have been up to 9 Volts, don't appear to be of proper length. There is no room inside the cabinet to place such a battery, but the wires are not long enough to properly reach outside.

The other is the placement of a two-terminal strip for Antenna & Ground connections; it does not line-up properly. A presumably New Old Stock Jones cable assembly for a 1927 Mercury battery cable has these wires coming out separately from the cable braid but are the same full length of 4 ½ feet. The heavily damaged cable that came with my radio has these wires cut short enough to have been connected only to this terminal strip.

These radios were said to be available in kit form, but I have not found any indication as to how you can differentiate between factory and kit-built sets. Except for the cracking of two sockets by a careless assembler, the rest of the work in the set seems to have been consistent with an adequately skilled hand.

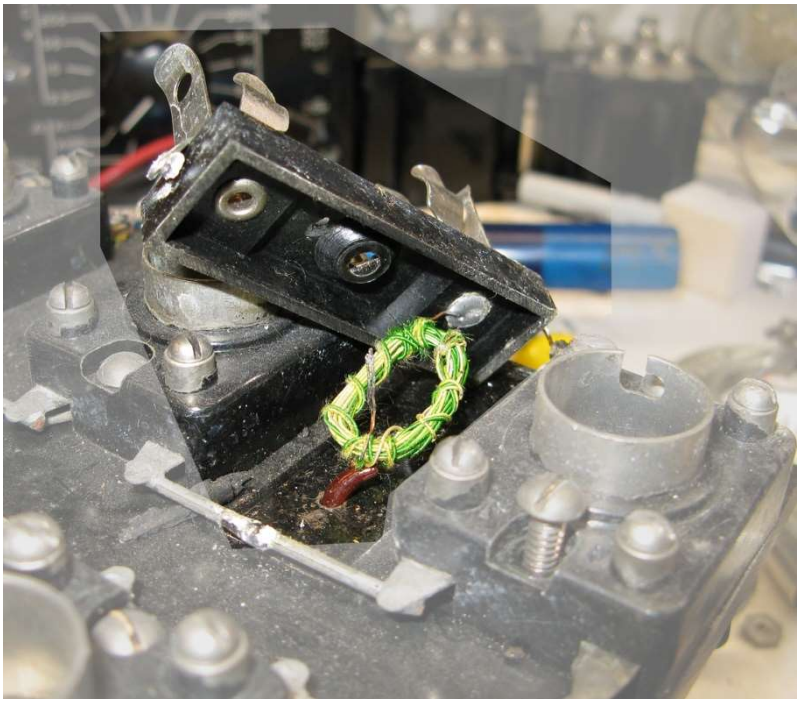
The Kipp Company extolled their radios as being especially suited to the great distances between Canadian cities. The small "Peanut Tubes" permitting a compact, power thrifty solution for radios requiring many stages of amplification.

I have not been able to locate a scan of the user's manual. There is a scan of an apparently 1927 model that I found on an old web site that is only thumbnail resolution, partially readable only with great difficulty.



There is unverified information saying that the Kipp Company was given permission to use the Western Electric/Northern Electric tubes only if the schematics for their radios were not published. It is said that the radio was available in kit form, but no assembly instructions have been discovered. Was a schematic part of that documentation, or were there only pictorials?

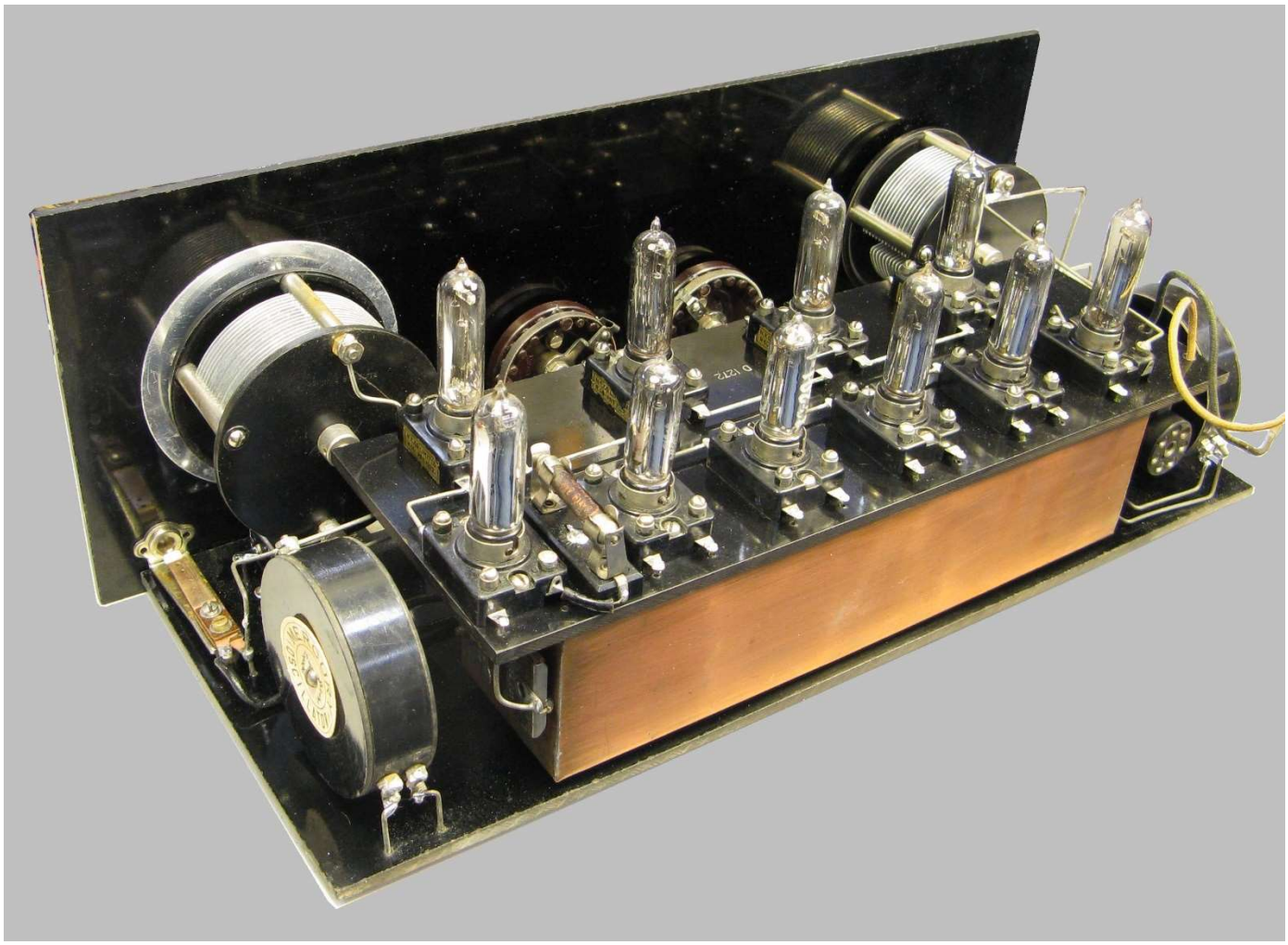
Photo Gallery



The second detector grid bias resistor clip hid quite a surprise. I had wondered where the .00025 mfd. capacitor was. I had expected the usual mica dielectric laminated capacitor but no; they used two lengths of 28 gauge, SCS wire about 16" long and wound up to form a "Gimic" capacitor carefully placed under the base of the clip! Crazy but it works.


MERCURY
OSCILLATOR


TUNER
OSCILLATOR
MODEL 28
MERCURY SUPER-TEN
TYPE-SU-10
CURRENT
VOLUME
OFF
ON
LOUD
SOFT



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