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The *BULLETIN*

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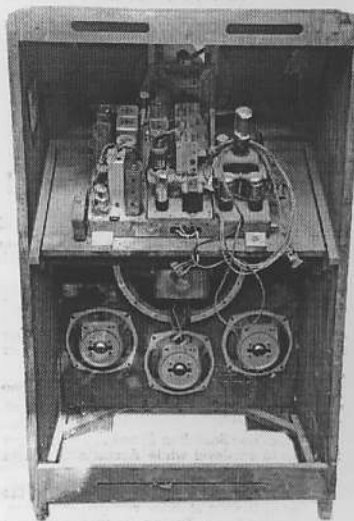
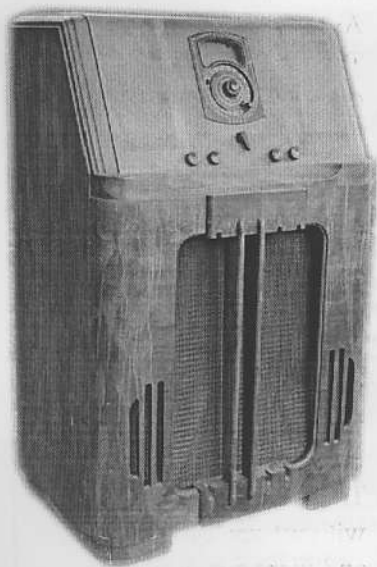
Restoring a Philco 38-116

Jeremy Schotter

Project Beginings

In February of 2006, Philco expert Ron Ramirez was selling several radios on eBay. Since he lived only an hour away from me, I figured I could buy a few and save on he shipping. Not quite sure why I bid on this one. Per the auction, this radio needed a lot of work to piece it back together. Many of the radios Ron was selling were pretty close to being parts radios only. One I ended up winning, a Philco 3118B, had been parted out already.

So on a miserable cloudy and cold day I made to trek to Evansville to pick up this beast. Naturally a blizzard blows in when I start heading back, a good test for the new set of all-terrain tires I had recently put on my Ranger. Long story short, I made it back and packed this beast down to my basement storage area on my own. At the time I did a little bit of preliminary work, mainly getting a list together of missing parts. Other than being moved from one side of storage to the other, this radio would sit patiently until fall of 2008 when restoration would begin.



The cabinet and chassis prior to restoration in August 2008

About the 38-116

The 38-116 is one of Philco's "No Squat, No Stoop, No Squint" line of radios, with around 25,600 manufactured. The whole idea behind that slogan was the slanted or inclined control panel and dial. It made it easier for a person to see the dial, without bending over or squatting down. According to Philco Radio 1928-1942 by Ron Ramirez (Yes, the same guy I bought my 38-116 from!), this advertising campaign was targeted for women. The 1938 dealer catalog states, "Here is a radio that a woman can tune with ease and grace...." Hey, the Great Depression is going on, whatever works to sell a few more radios! Selling at \$200 new, not a lot of families could afford one of these.



No longer need you "Squat, Stoop or Squint"

PHILCO HIGH-FIDELITY RADIOS

with

AUTOMATIC TUNING

Everything you could ask or hope for in a radio! These two High-Fidelity Philcos are complete in every detail . . . with all the latest Philco developments including:

Philco Automatic Tuning . . . dial the call letters once, and CLICK . . . there's your station.

The Inclined Control Panel . . . inclined for tuning with ease and grace whether sitting or standing.

Philco High-Fidelity . . . more than double the tonal range of ordinary good radios . . . for glorious realism.

Philco Inclined Sounding Board . . . brings every note up to ear-level while Acoustic Clarifiers eliminate "boom."

Philco Foreign Tuning System . . . doubles the number of foreign stations you get and enjoy. Five Spread-Band Tuning Ranges cover all that's interesting in the air!

Never before have you been offered such a combination of Power, Selectivity, Tone and Range . . . for radios to match these Philcos have never before been known!

This model and others from the 1938 year featured an Automatic Tuning Mechanism. This consisted of a large round dial with a tuning knob on the edge of the dial. To tune a station, you simply grasp the knob and turn the dial around until it stops. The dial stops because there are up to fifteen selector stops on the mechanism. Other features were three acoustic clarifiers, which are called passive radiators in today's terms. These are basically speakers without voice coils or magnets, and were meant to "assist" the main speaker during operation.

Philco 38-116 (continued)

A monster chassis that utilizes 15 power hungry tubes, a power output of 15 watts, and receiving 5 bands, make up this beast of a radio. Truly a stunning example of a technological achievement of its time.

Any observant repairman will quickly notice that there are two different schematics for this model, a 38-116 code 121 and a 38-116 code 125. The main difference I can find is a change in the tube lineup. This being the mixer tube was changed from a 6L7G in the 121 to a 6A8G in the 125, and the RF tube being changed from a 6K7G in the 121 to a 6U7G in the 125. My radio is a code 125.

Electronic Restoration

No project is more intimidating than a 15 tube chassis that has been hacked up by a previous repairman. Perhaps that is why I put off restoring this radio for almost three years. My first task was to begin tracking down missing or damaged parts. Original replacement parts that had to be found included:

- 5 Tube Shield Bases, someone had hacked up the originals to accept metal or GT style tubes.
- 4 New filter cans and mounting brackets to restuff, the originals were completely removed.
- A five pin plug and socket for the speaker, these had been replaced with a Molex type plug and socket.
- Several tube shields, these were missing.
- A complete set of G style tubes, just wanted the chassis to look good and original after restoration.
- 2 new tube grid caps, two were replaced with some big gawdy black plastic ones.
- A new dial scale, the one with my chassis had been broken and I would later find out was the wrong one entirely.

Several sources were used to find these parts. Most were purchased from Mark Oppat's Old Radio Parts, Gary at Play Things of Past, with quite a few other parts being purchased via a wanted ad on the Antique Radio Forums classified section.



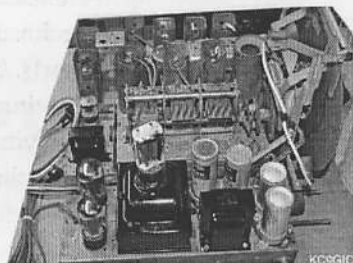
Repair of the rectifier tube socket

Much of the original wiring also had to be replaced. While the cloth covered wire in radio of this vintage usually holds together pretty good, it will easy crumble if flexed too much. The wiring harness going to the speaker had to be replaced. Modern cloth covered wire rated for 600V was used for this, keeping the colors the same as the original if possible. Other wires needing to be replaced included all of those going to tube grid caps, feeding the pilot lamps on the dial, and the wiring harness going to the two switches on the Automatic Tuning Mechanism. Once this was replaced, and a new reproduction cloth covered cord was installed, it was time to prepare for powering up the radio.

Once everything was put together and the speaker was reglued, my radio was carefully powered up using a isolation/variatic power supply and carefully observing the amperage draw. The radio was showing signs of life, receive stations on most bands.

There still were a few nagging problems, like intermittent shorts causes by bad wire insulation and corroded connections on the band selector switch. One problem in particular was sparking and a loose connection inside of the rectifier tube socket, mounted on top of the power transformer. In the past someone rewired the socket so that a 5U4 could be used as a rectifier, as the 5U4 is an acceptable replacement for the 5X4, but the 5U4 uses different pins. Fixing this problem required the use of some heat shrink tubing to keep the sharply bent wires inside from shorting out, as the original insulation was falling apart.

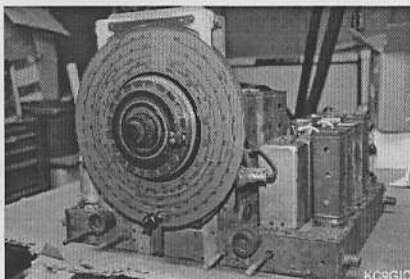
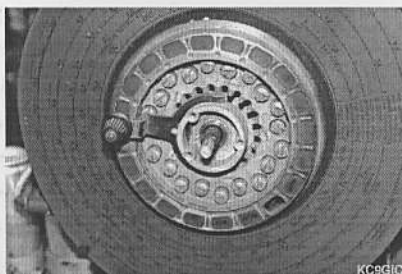
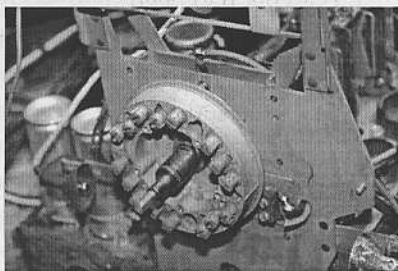
At this point the radio was working extremely well despite its history of rough repairs. Apparently the only thing someone hadn't messed with in the past were the trimmer capacitors, as no alignment was needed. At this point it was time to get the chassis looking better cosmetically. Some NOS tube shield bases were acquired to replace those that had been hacked up. The rivets holding down the originals had to be drilled out, and flathead 6-32 screws and nuts were used to bolt in the replacements. The black paint on the transformers was chipped up, so a new coat of black lacquer was sprayed on to spruce them up a bit. Finally using a Dremel and a wire brush the entire chassis was lightly cleaned, using Brasso on some parts. The final results don't look too bad for a seventy year old piece of metal.



The restored chassis.

Philco 38-116 (continued)

The last repair to the chassis was the replacement of the dial scale. The original wasn't in bad shape when I started restoration. During the process though, the delicate dial scale was cracked. There is a certain procedure that has to be followed when disassembling the automatic tuning mechanism, which is detailed in the Philco Service Bulletin no. 273. The bulletin, along with a wealth of other hard-to-find information can be purchased from [The Philco Repair Bench](#). The entire tuning mechanism was disassembled, cleaned, and rewired. A replacement dial scale was purchased from [Mark Oppat's Old Radio Parts](#). Mark manufactures near perfect reproductions of many dials, including one for my 38-116. While comparing the original dial to the reproduction, I noticed a difference in the frequencies. Doing some searching online, Ron Ramirez made a post on the [Philco Phorums](#) back in 2005 talking about this very radio. He mentions that he had to replace the entire automatic tuning mechanism.....Thats it! Researching the part number of my original dial, I found out it is a dial for a 37-116 model that has different circuitry, thus the frequencies on the new "correct" dial didn't match up entirely.



NO SQUAT



NO STOOP



NO SQUINT



WITH THE
1938
AUTOMATIC TUNING
PHILCO

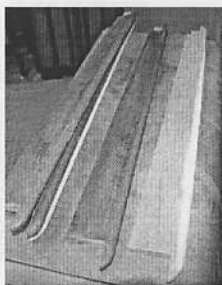
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Cabinet Restoration

The cabinet had been stripped in the past, a sloppy job though. A liquid had been splashed on the sides and top, resulting in big bleached looking spots. My largest concern was if these spots could be removed or covered up. Washing and scrubbing with different chemicals had no effect. Some orange Citistrip was brushed on over the spots, and was allowed to soak in for half an hour or so. Once the stripper was removed, and the cabinet was washed down, the spots seemed to be completely gone. Photo to the right shows the cabinet before being cleaned up showing the spots.

The other obstacle was replacing the two missing vertical bars in front of the speaker grille. A close family friend who restores antique furniture knew of an Amish woodworker who could reproduce about any obscure part as long as he had a pattern to go by. So they took one of the remaining bars to him, and a few weeks later I had two perfect reproductions. As for a price, the woodworker wouldn't accept more than \$10 for the job. All of the bars were sanded and the grain was filled. They were then toned with Mohawk extra dark walnut and then medium brown walnut so that they would match.

The bars were then reglued to the cabinet. With no other repairs needed, it was time to refinish the cabinet. The whole cabinet was sanded prior to refinishing, and any dust was blown away with an air compressor followed by wiping down with a tack cloth. Deft brand gloss lacquer was used, sprayed on with a Critter spray gun. The lacquer was thinned down, using three parts lacquer and one part thinner. After several coats of lacquer, the decals were ready to be installed. All of the decals needed for this model were purchased from [RadioDaze](#). These decals were a royal PITA to apply! There is a word in the shape of an arc over each knob that designates the function of that particular control. These were very hard to match up and keep a consistent distance between them all. Applying these was a tedious process, but the final result turned out pretty good. Once the decals had dried, a layer of clear lacquer was sprayed over them.



Philco 38-116 (continued)

Originally this radio used a "V" pattern grille cloth. This was long gone on my radio, and replaced by something that almost resembled a plastic mesh. A reproduction cloth was also purchased from [RadioDaze](http://RadioDaze.com). Pattern # 41, Chevron "V", was used, the same type as the original. The grille cloth would also prove to be a royal PITA to install. If the cloth was slightly off centered or warped, it would be very obvious with the vertical bars in front of it. After several tries, I was able to get the cloth positioned so that it was pretty close, but it was still slightly off in places. Messing with the cloth too much would risk damaging it.

At this point it was time for complete reassembly. This radio uses a odd method to hold down the chassis. The chassis has four pins on each end of the sides that fit into a wooden block. The wood block has a carriage bolt that goes through the mounting board that the chassis sits on, and a nut is tightened below. Three out of my four mounts were gone. Replacements we made using 2X4 lumber and 1/4" carriage bolts.

Final Results

I am quite satisfied with the outcome of this restoration. I have always wanted a high end radio for my collection, but never wanted to pay the high price as these sometime command. When all said and done, I have around \$200-\$300 invested in this project. A very reasonable amount to me, and the final results were definitely worth the money and effort. There are still a few minor flaws that need to be fixed, such as finding a replacement back panel. But until then, this radio is pretty much complete. *Jeremy*



**Look for IHRS members Janet and Jack LaVelle
at www.chicagotribune.com/radiomuseum
(a three minute video of their radio display)**