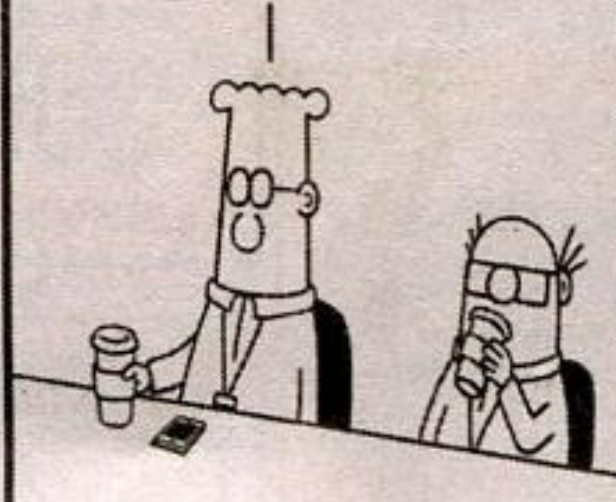


ALL I DID TODAY
WAS CREATE A BUNCH
OF POWERPOINT SLIDES
THAT NO ONE WILL
UNDERSTAND.



Dilbert.com @ScottAdamsSays

BUT I GOT PAID THE
SAME AS IF I HAD DONE
SOMETHING USEFUL.



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IS THIS THE FIRST
STAGE OF BECOMING
YOU?



IF YOU'RE
LUCKY.

THE RADIO REPAIR WORKSHOP

August 13th NM Radio Collector Club

Richard Majestic

- ▶ The tools
- ▶ The analysis
- ▶ The process of repairing
- ▶ The alignment and testing

THE 'REPAIRING' PROGRAM



OR



A MODERN, FULL FUNCTION TUBE TESTER IS
ESSENTIAL, MAYBE NOT ONE OF THESE ...



ACTUALLY THE HAND TOOLS



MORE HAND TOOLS



THE TEMPERATURE CONTROLLED SOLDERING
IRON AND TOOLS, AT HAND ON THE BENCH



A VARIAC AND 120VAC ISOLATION TRANSFORMER



A FEW OF THE CLEANING AND
LUBRICATING AIDS LIKE 3IN1 OIL



THE GLUES AND LOC-TITE

- ▶ Tube tester
 - ▶ I have three Hickoks and a Precision [Hickok 533 & 605]
- ▶ Volt Meters
 - ▶ Digital Volt-Ohm-capacitance meter [Fluke 87]
 - ▶ Old VOM [Simpson 260]
 - ▶ Simple transistor tester (beta) [Simpson 261]
- ▶ RF Signal generator [HP 606A]
- ▶ Sweep oscillator
- ▶ Frequency counter
- ▶ Oscilloscope Tektronix [2465BDM]
- ▶ Audio oscillator –Distortion analyzer [Tek]

THE TEST EQUIPMENT I USE



TWO OF THE HICKOK TUBE TESTERS 533 & 605

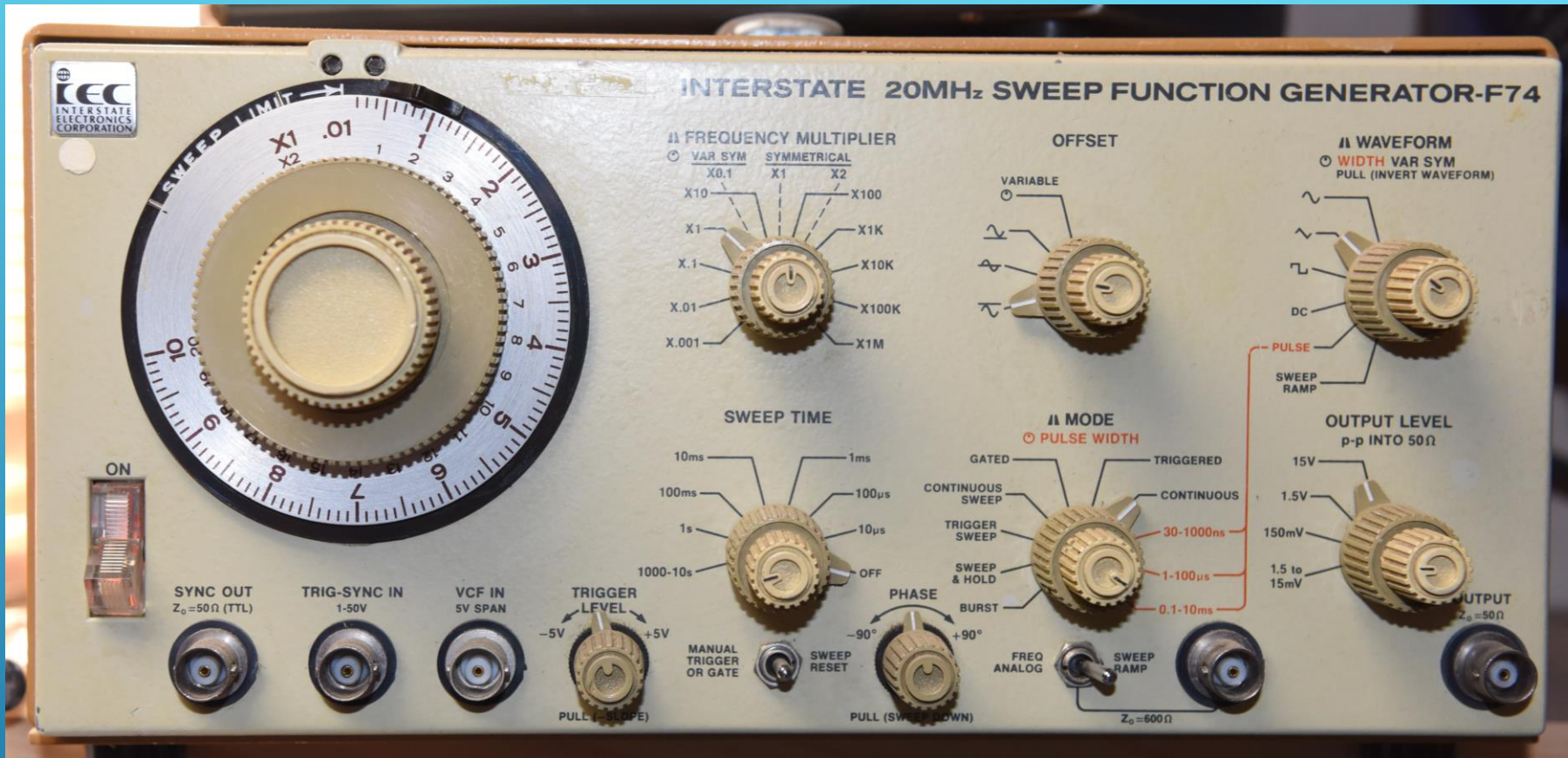


VOLT METERS & TRANSISTOR BETA TEST

FLUKE 87, SIMPSON 260 AND 261



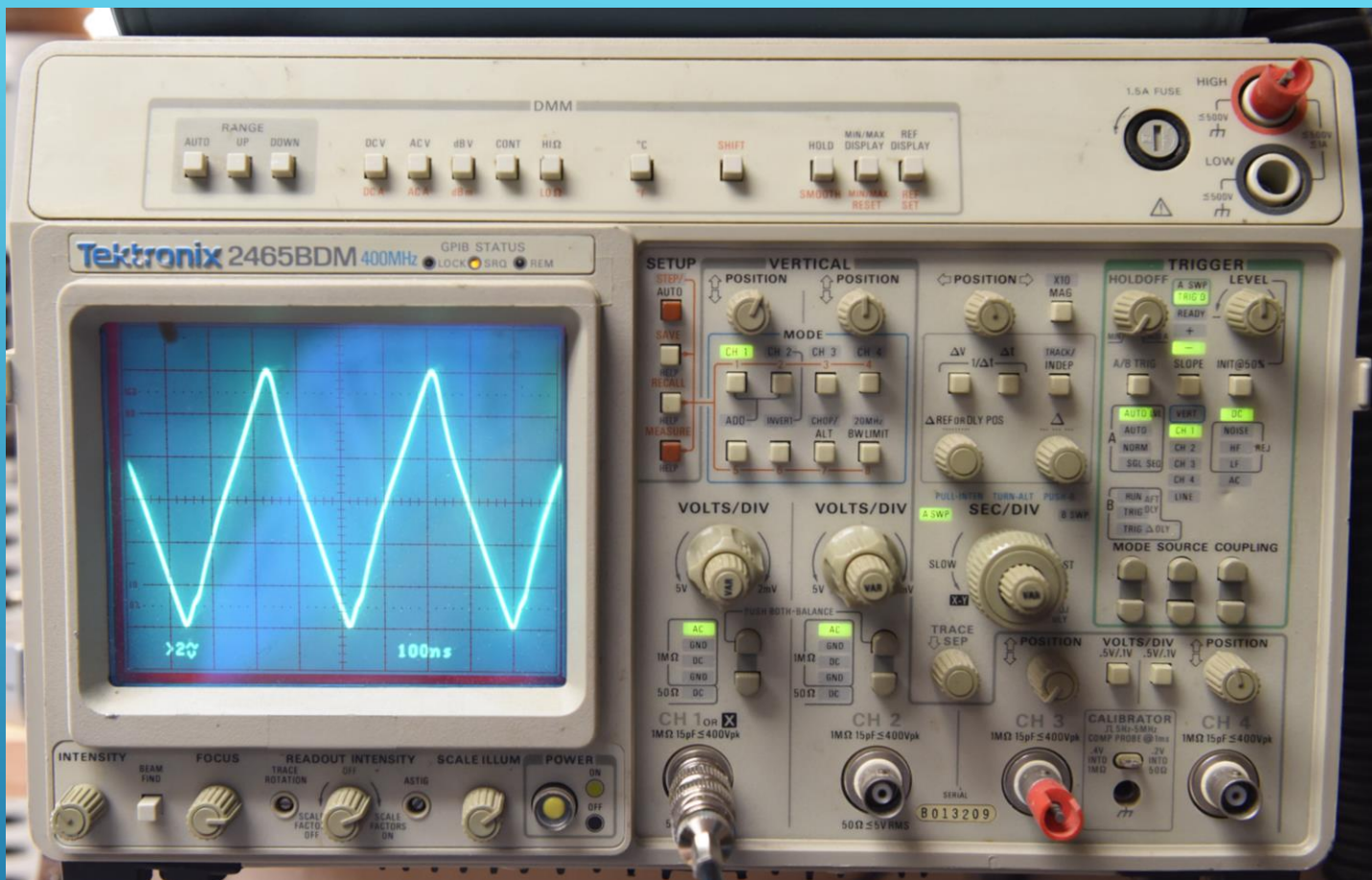
RF SIGNAL GENERATOR HP 606A & JACKSON
[HARMONICS GENERATOR]



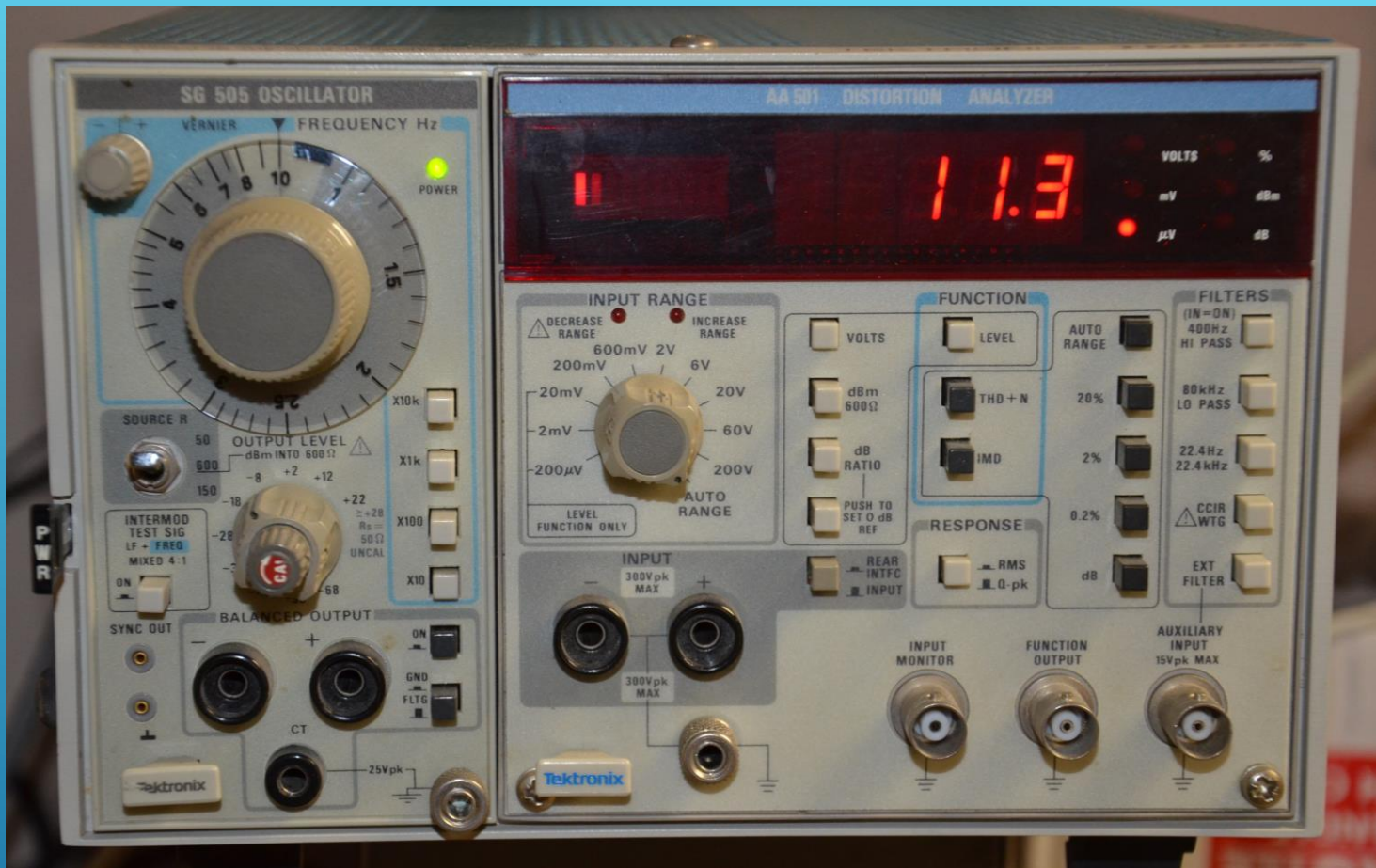
SWEEP FUNCTION GENERATOR



FREQUENCY COUNTER



OSCILLOSCOPE TEK 2465BDM (THE LAST TEK
ANALOG 400MHZ SCOPE THEY MADE)



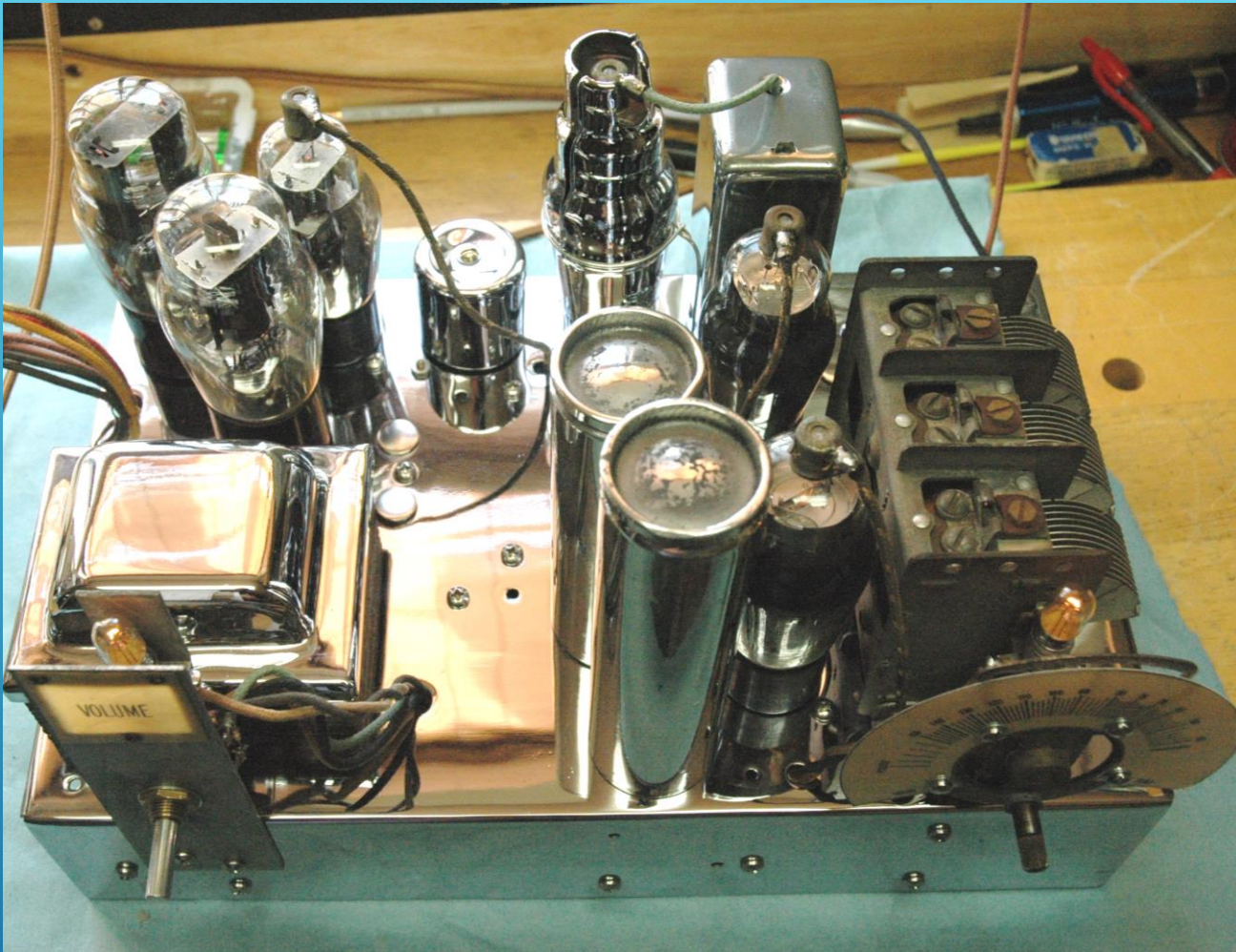
AUDIO OSCILLATOR & DISTORTION ANALYZER, TEK SG505 & AA501

- ▶ Remove, test and replace bad tubes
 - ▶ Re-solder loose tube grid cap
 - ▶ Wipe clean the tubes, no liquids
- ▶ Clean up chassis and spider webs from under the chassis
- ▶ Remove and replace all 'smoked resistors'
- ▶ Measure and replace all out of tolerance resistors
- ▶ Remove and replace all film capacitors
- ▶ Replace electrolytic cans and tubular electrolytic capacitors
- ▶ If it's a rubber wire radio, replace all wire with loose insulation

THE REPAIR PROCESS STEPS

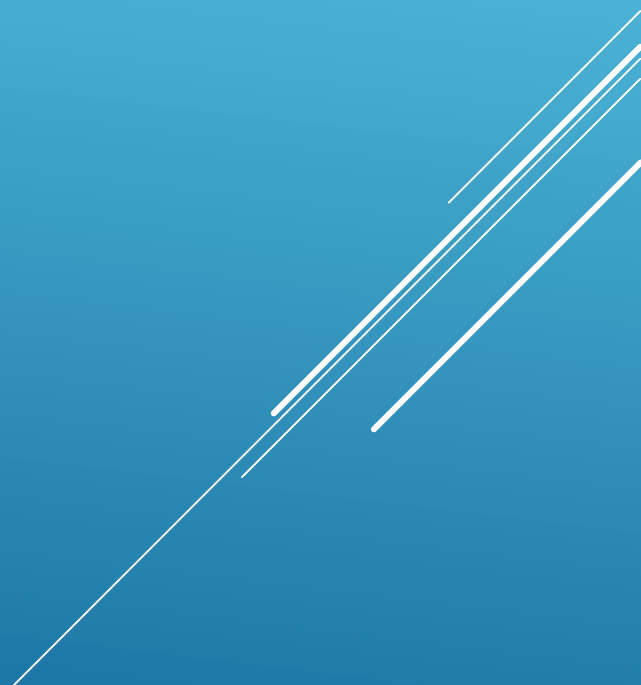


BEFORE



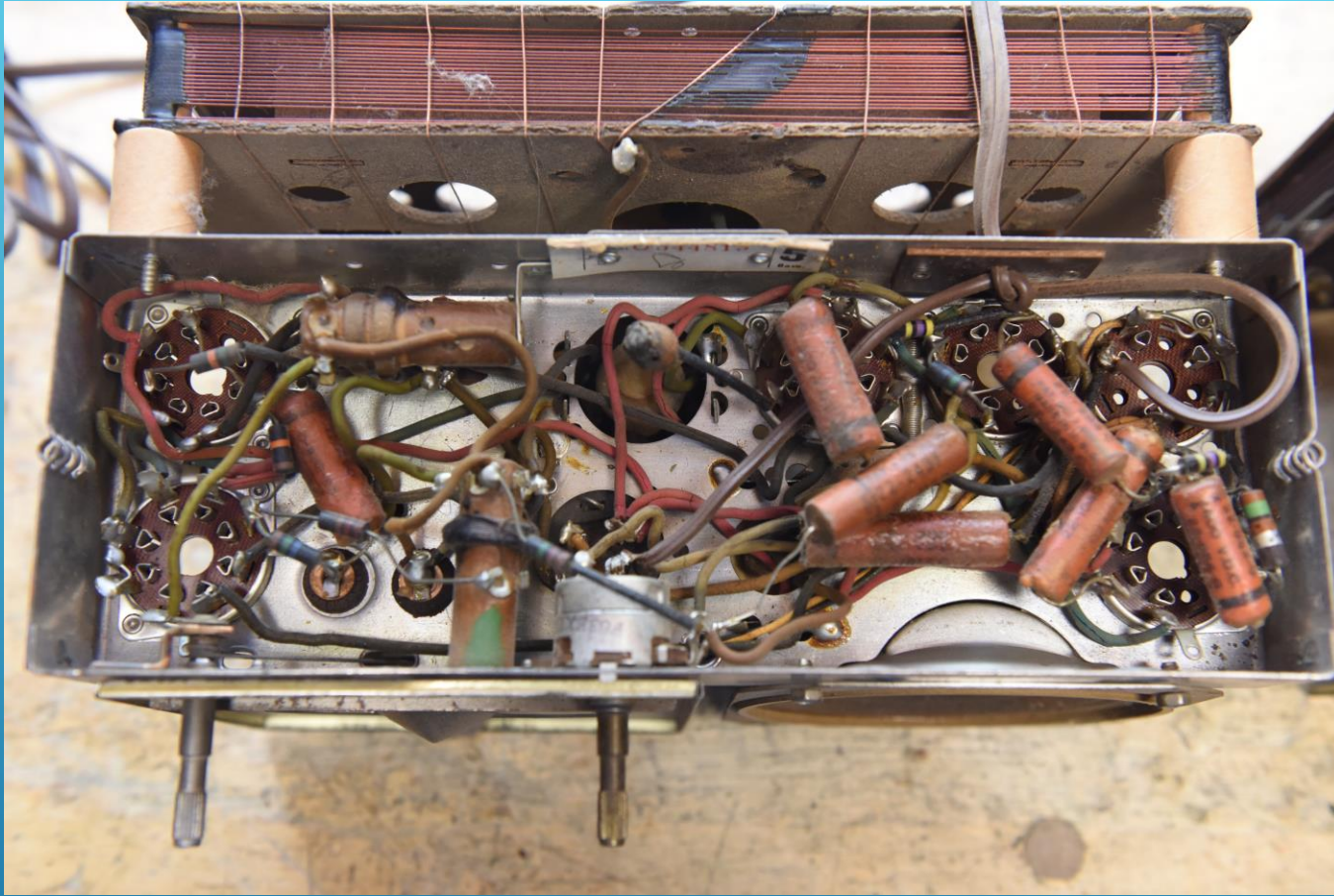
AFTER

▶ Let's get to work...

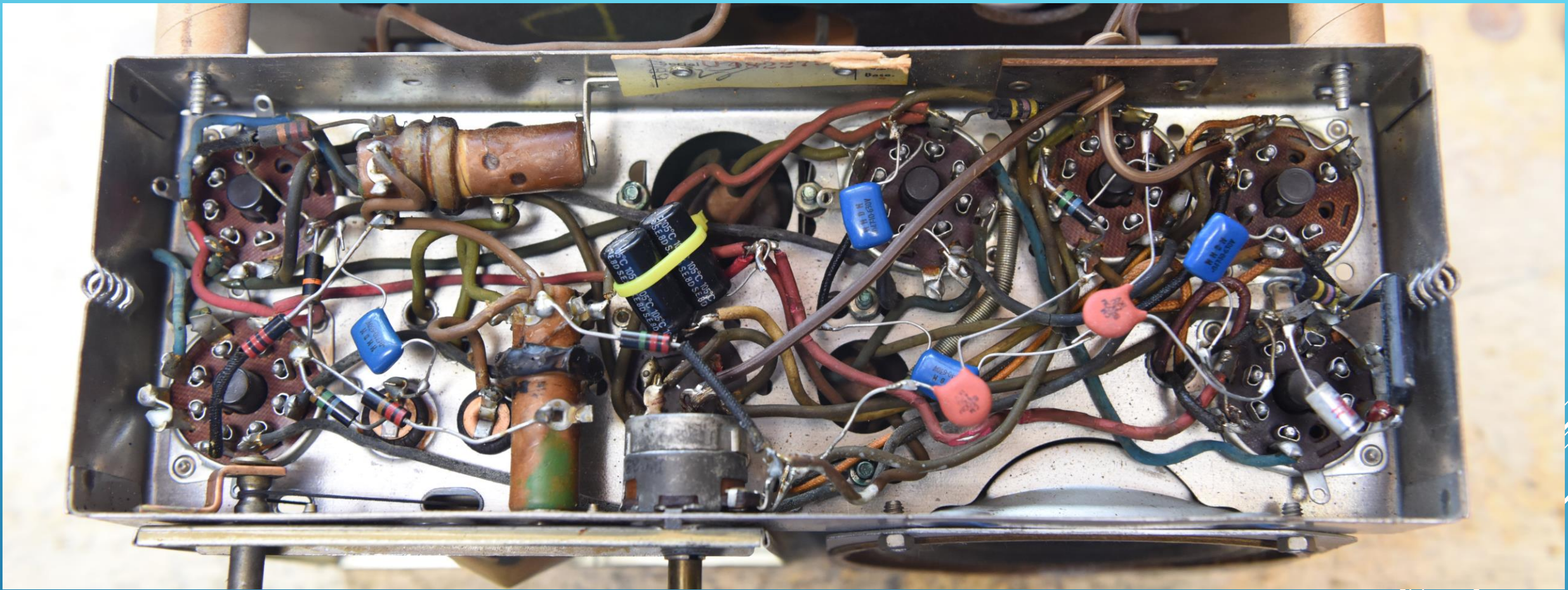




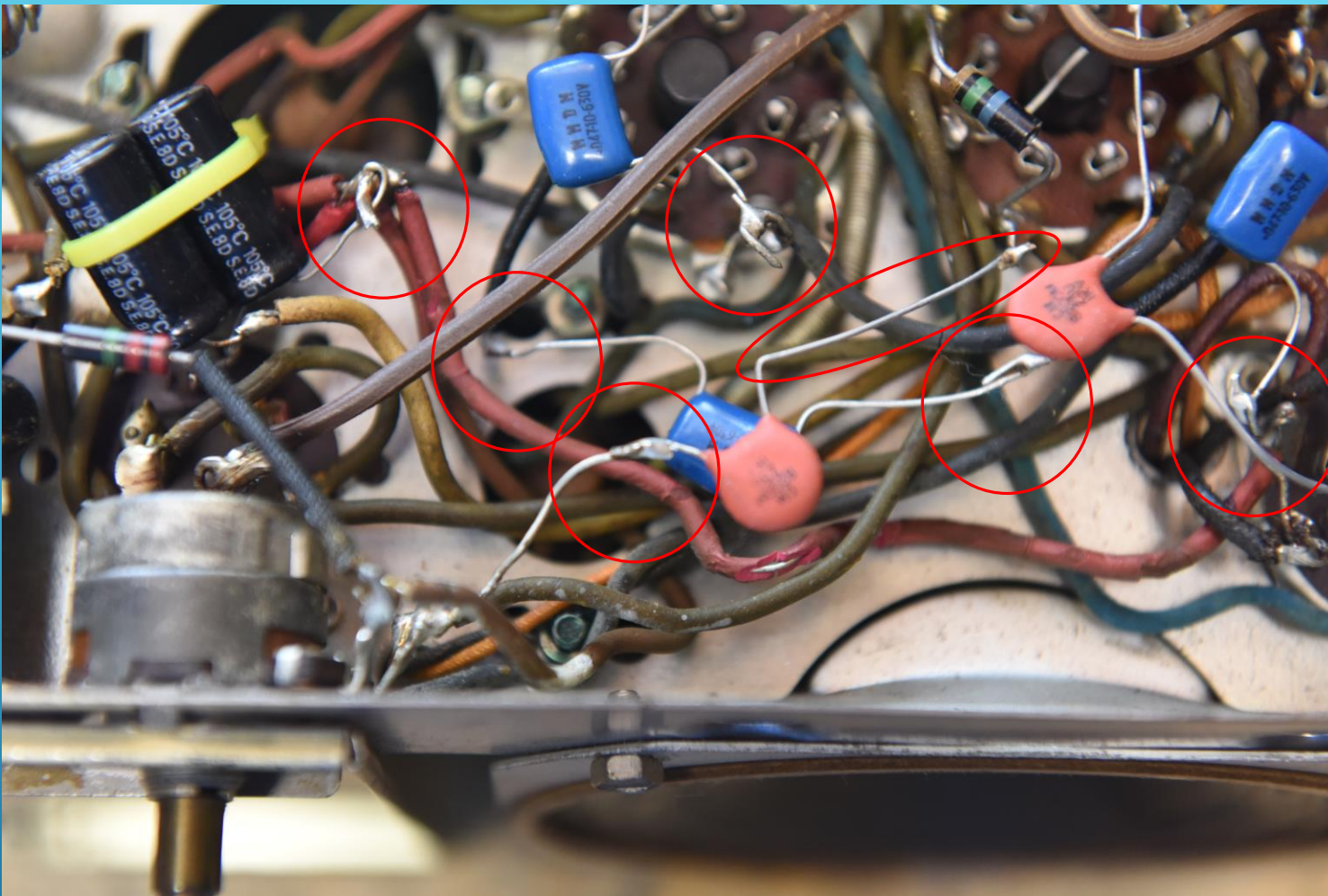
1938 ZENITH 6D612 BAKELITE RADIO
6-TUBE, AC-DC (NO POWER TRANSFORMER)



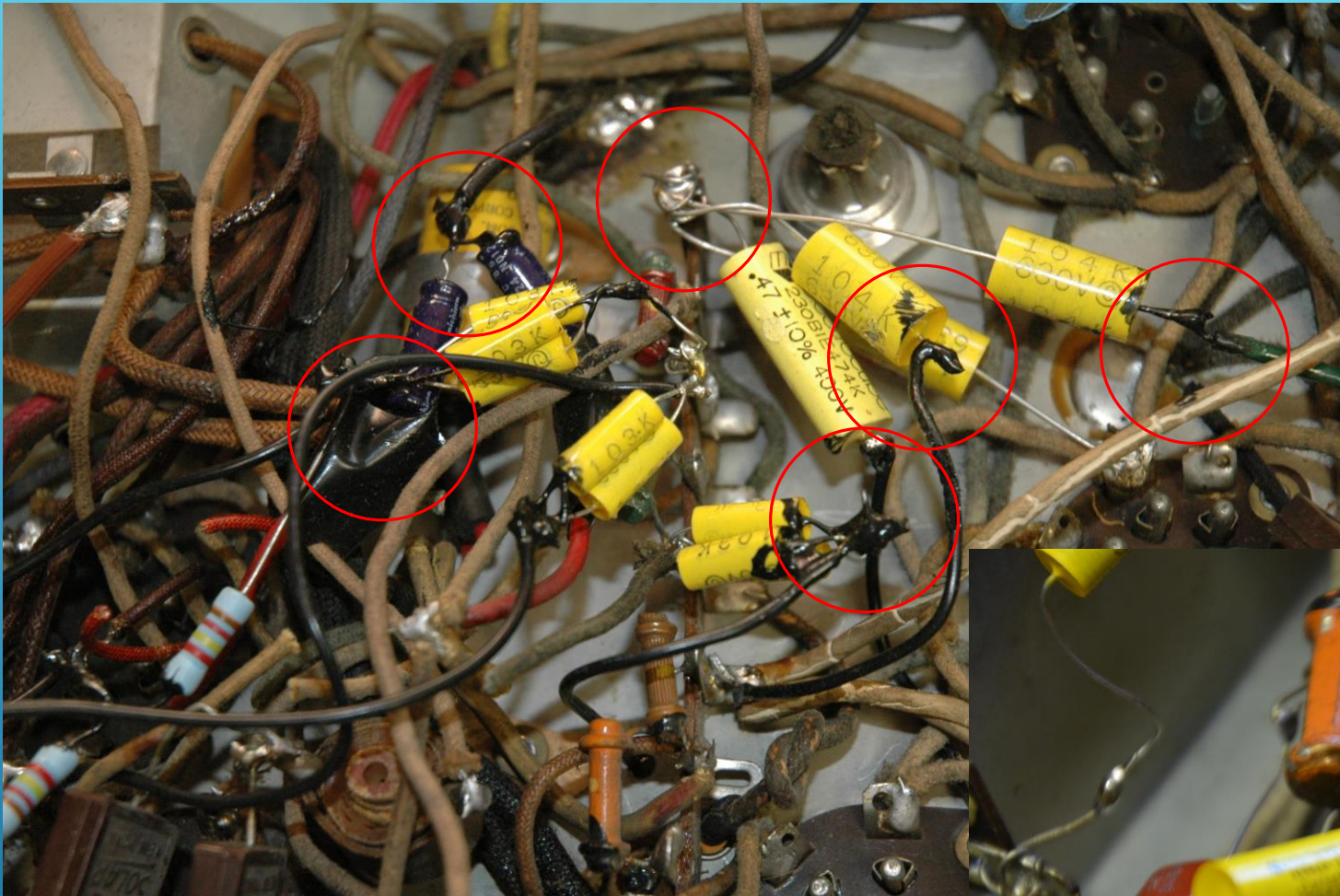
THIS IS THE WAY I LIKE TO FIND MY
RESTORATION PROJECT RADIOS



NOT LIKE THIS!



UNACCEPTABLE WORK



OR NOT LIKE THIS

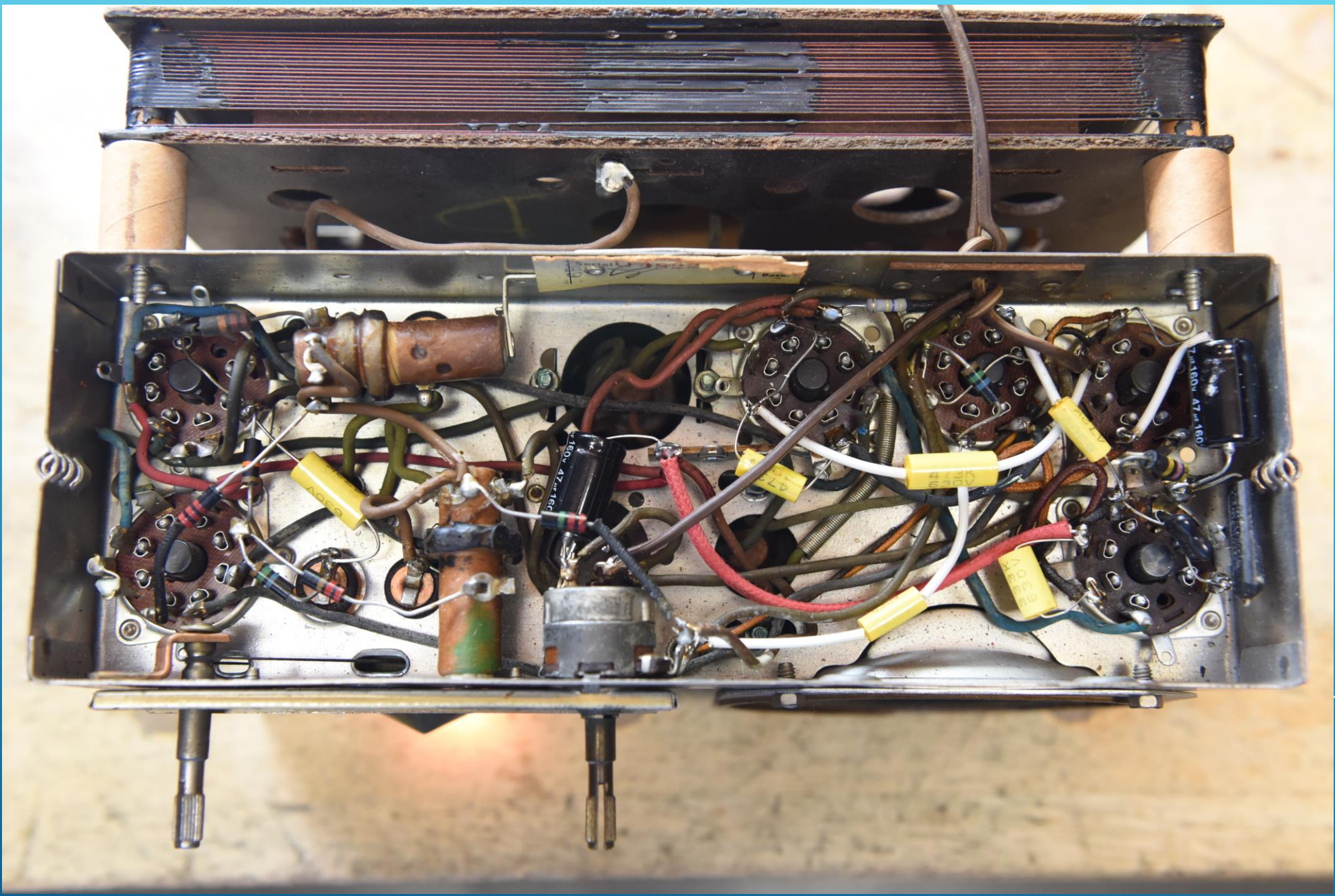


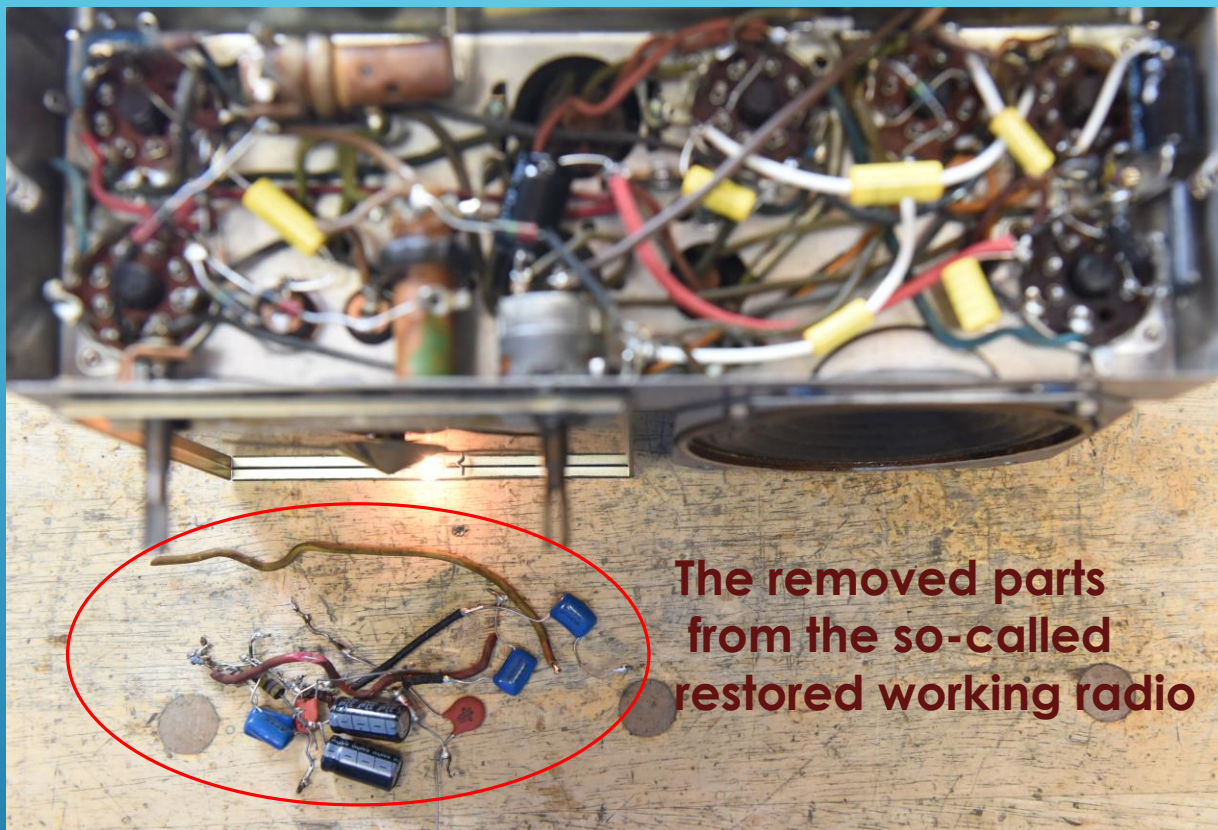


OR LIKE THIS

- ▶ Remove test and replace bad tubes
- ▶ Clean up chassis and spider webs from under the chassis
- ▶ Remove and replace all 'smoked resistors'
- ▶ Measure and replace all out of tolerance resistors
- ▶ Remove and replace all film capacitors
- ▶ Replace electrolytic cans and tubular electrolytic capacitors
- ▶ This was a rubber wire radio, I replaced all wire with lose insulation

IT NOW LOOKS LIKE THIS





The removed parts
from the so-called
restored working radio

NOW TEST, CONNECT TO ISOLATION TRANSFORMER,
VOLTAGE MEASUREMENTS AND ALIGNMENT



A WORKING SAFE 1938 ZENITH 6D612

ANOTHER EXAMPLE OF A TOTAL
RESTORATION OF THE RADIO AND CABINET

A series of four parallel white lines of varying lengths, slanted diagonally upwards from left to right, located in the bottom right corner of the image.

MAJESTIC 161



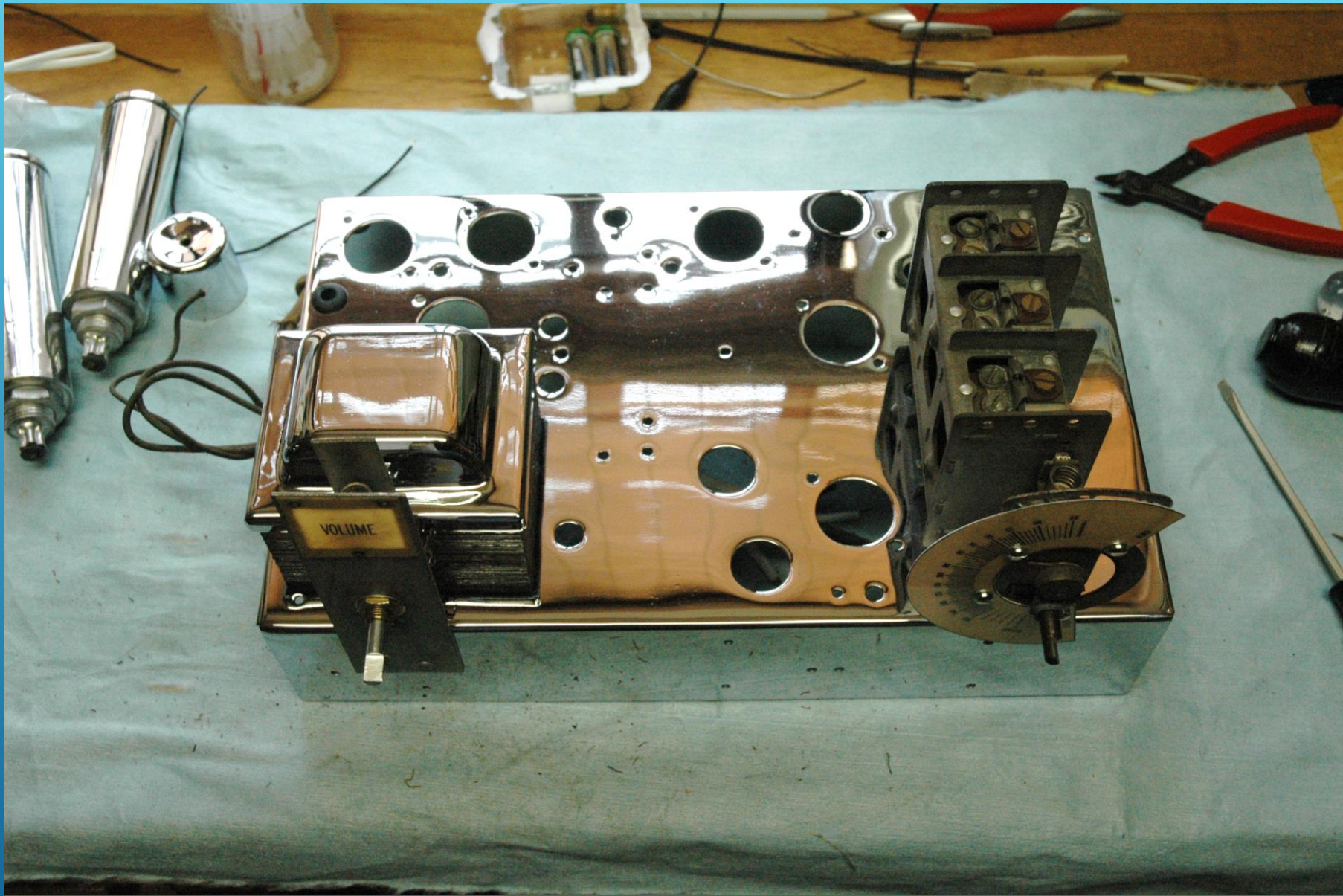
- ▶ This 1934 Grigsby-Grunow Majestic 161 as purchased from Mark Toppo's friend
- ▶ Mark totally rebuilt and finished the cabinet
- ▶ I stripped the chassis of everything
- ▶ Had the chassis and grille re-chromed
- ▶ Replaced all the electronics in the chassis
- ▶ Then repaired the radio the way I just talked about
- ▶ Replaced the chassis, grille cloth, chrome grille, speaker and cabinet bezel parts

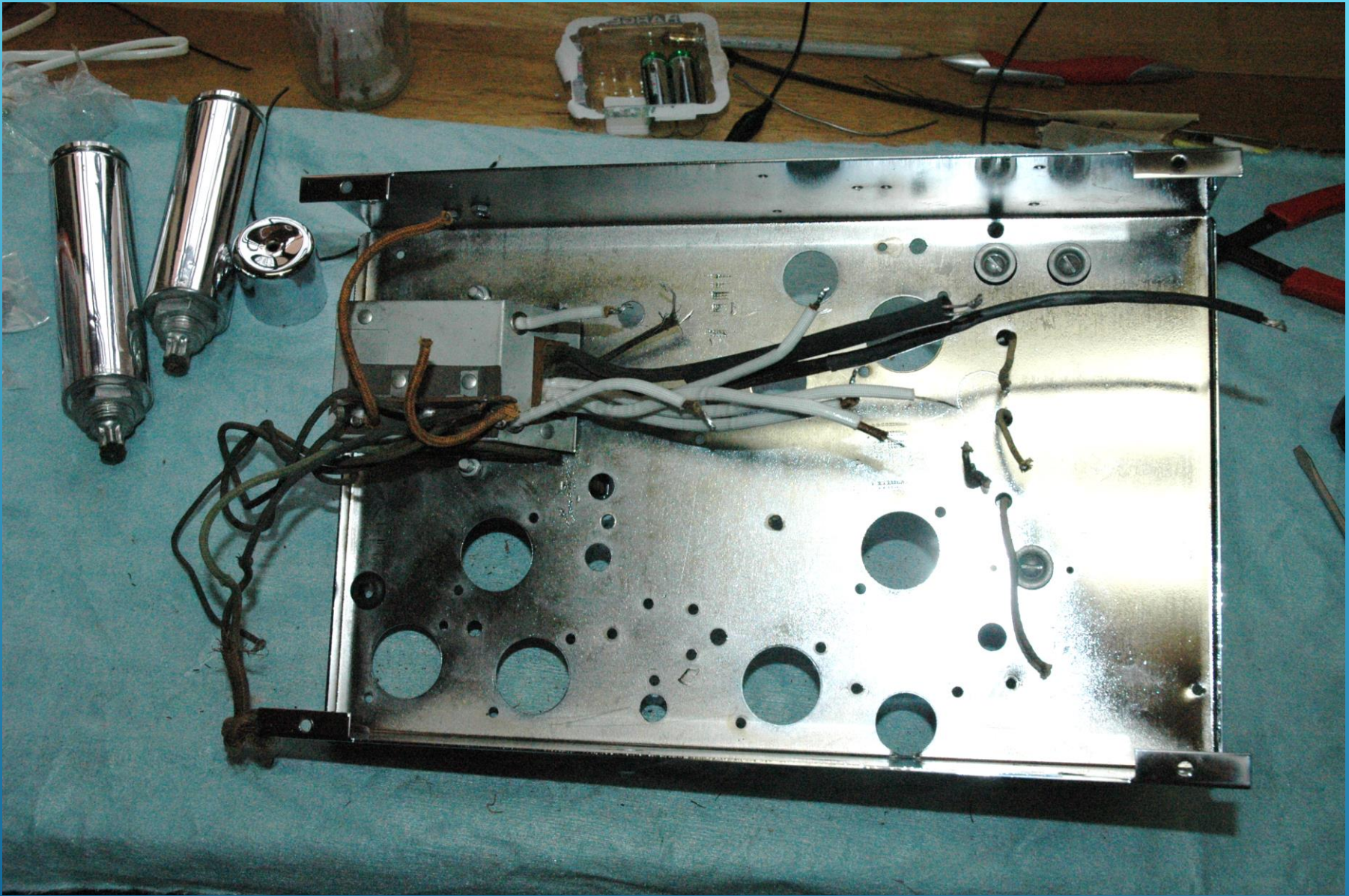


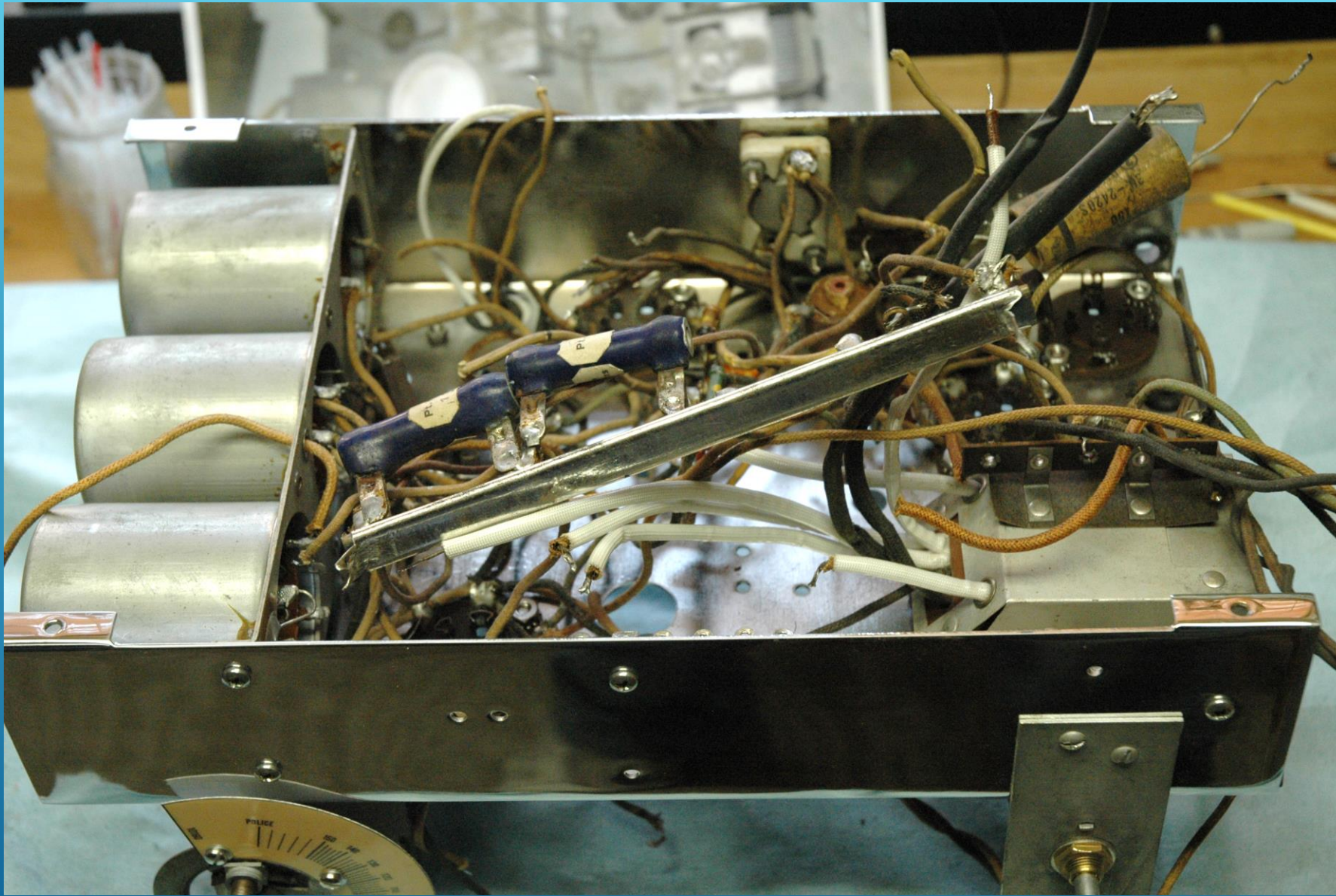
THE PROCESS TO A FINISHED COLLECTORS RADIO

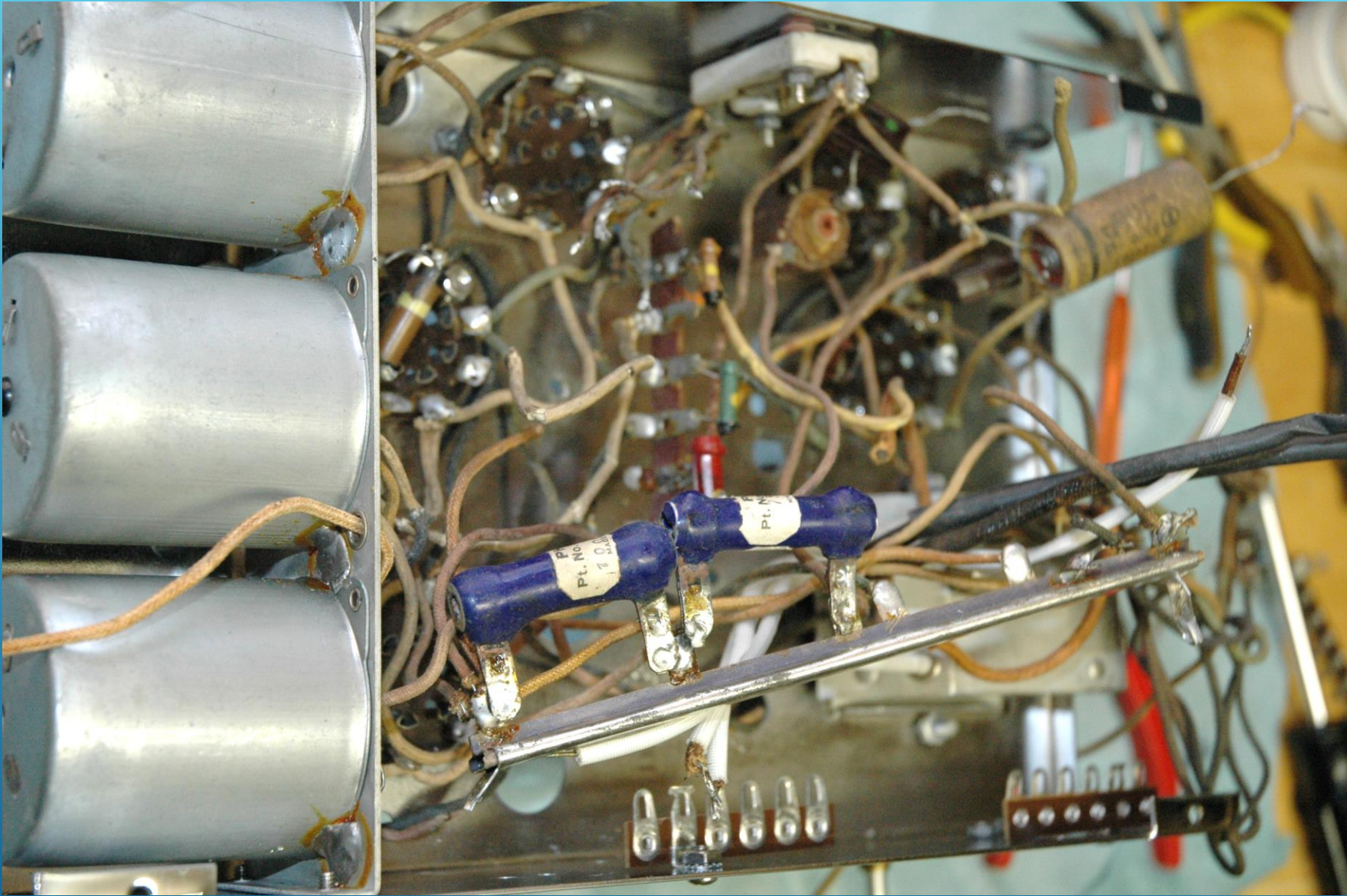


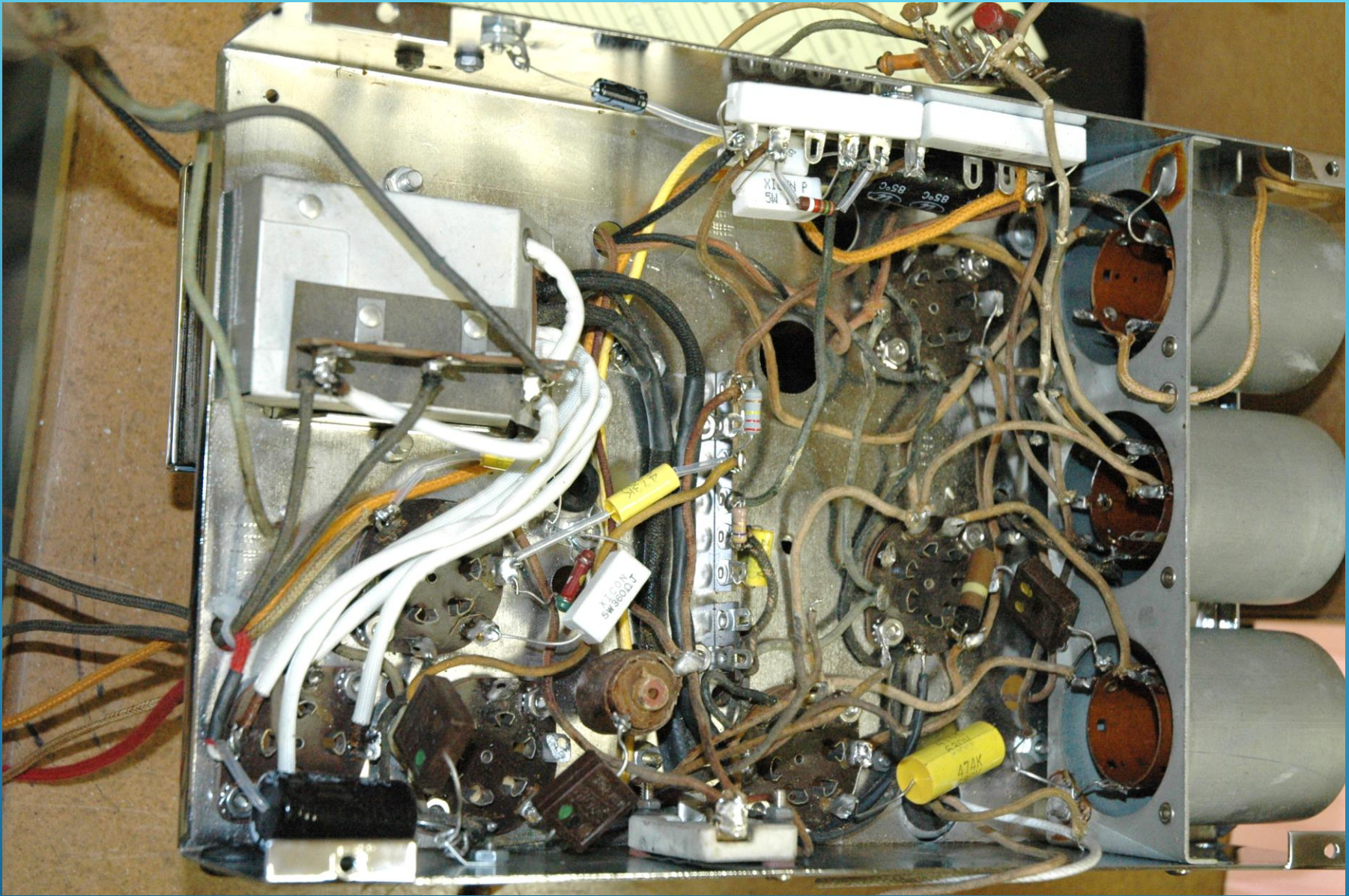
I STARTED WITH THIS

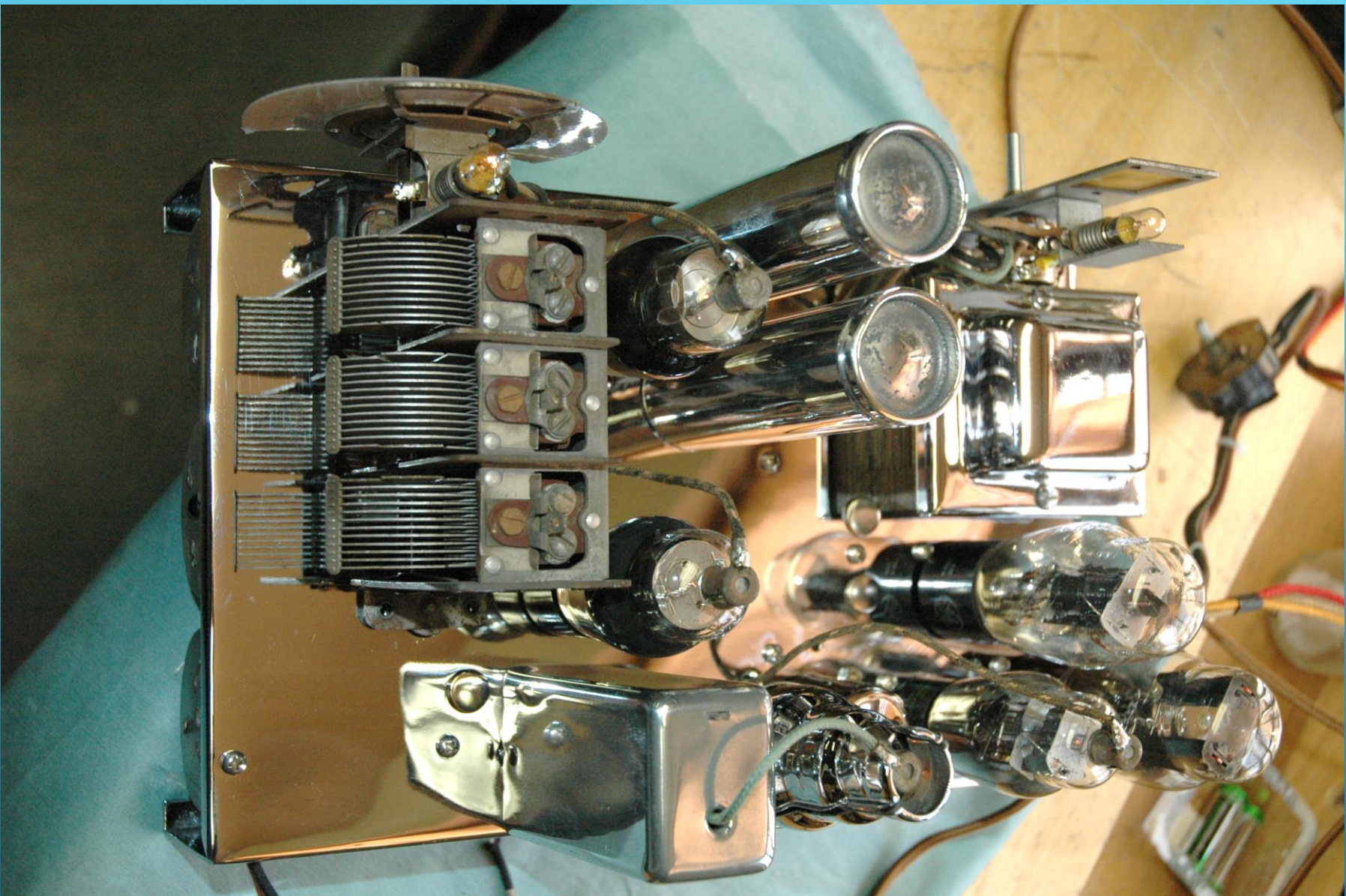


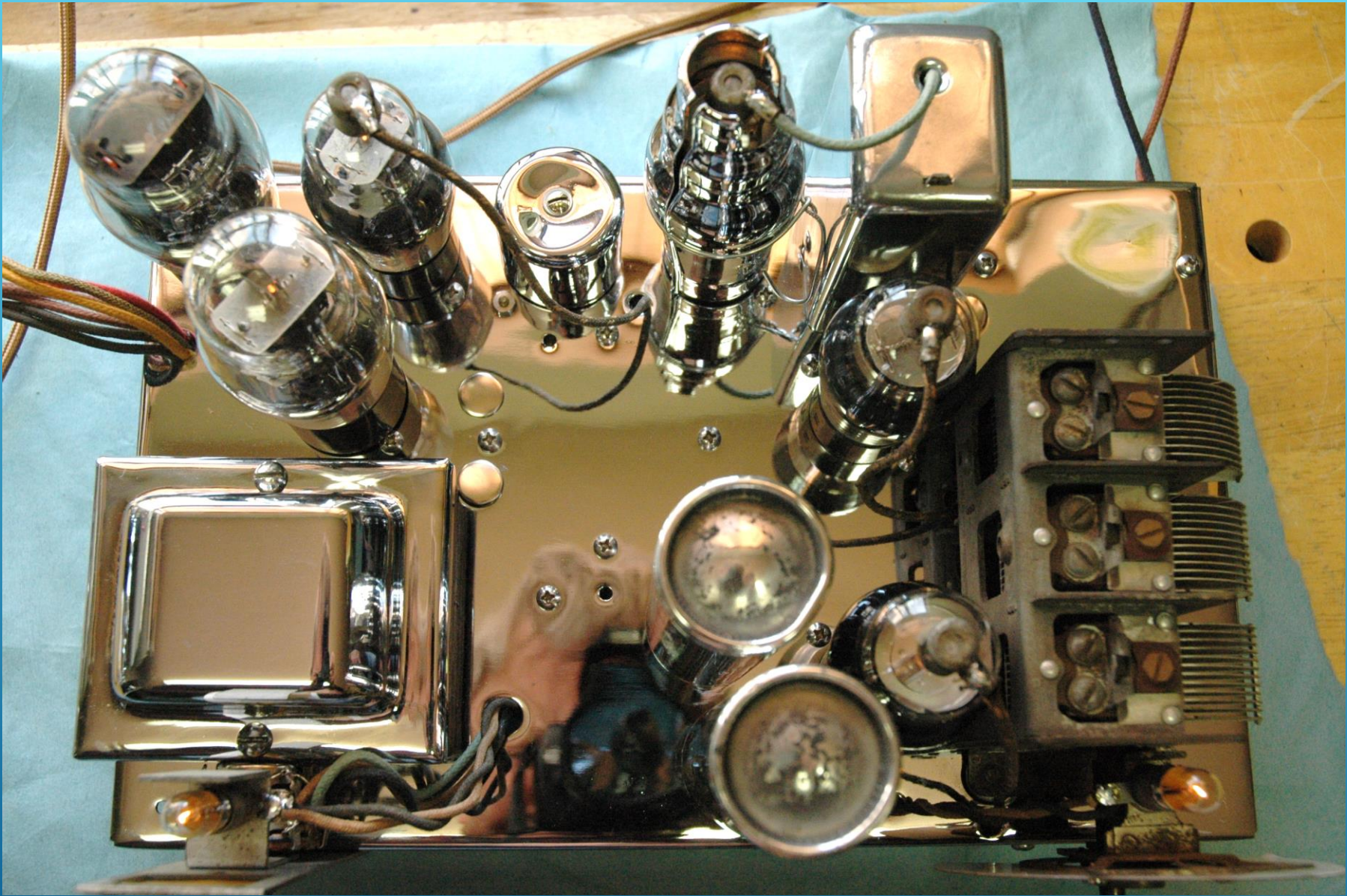


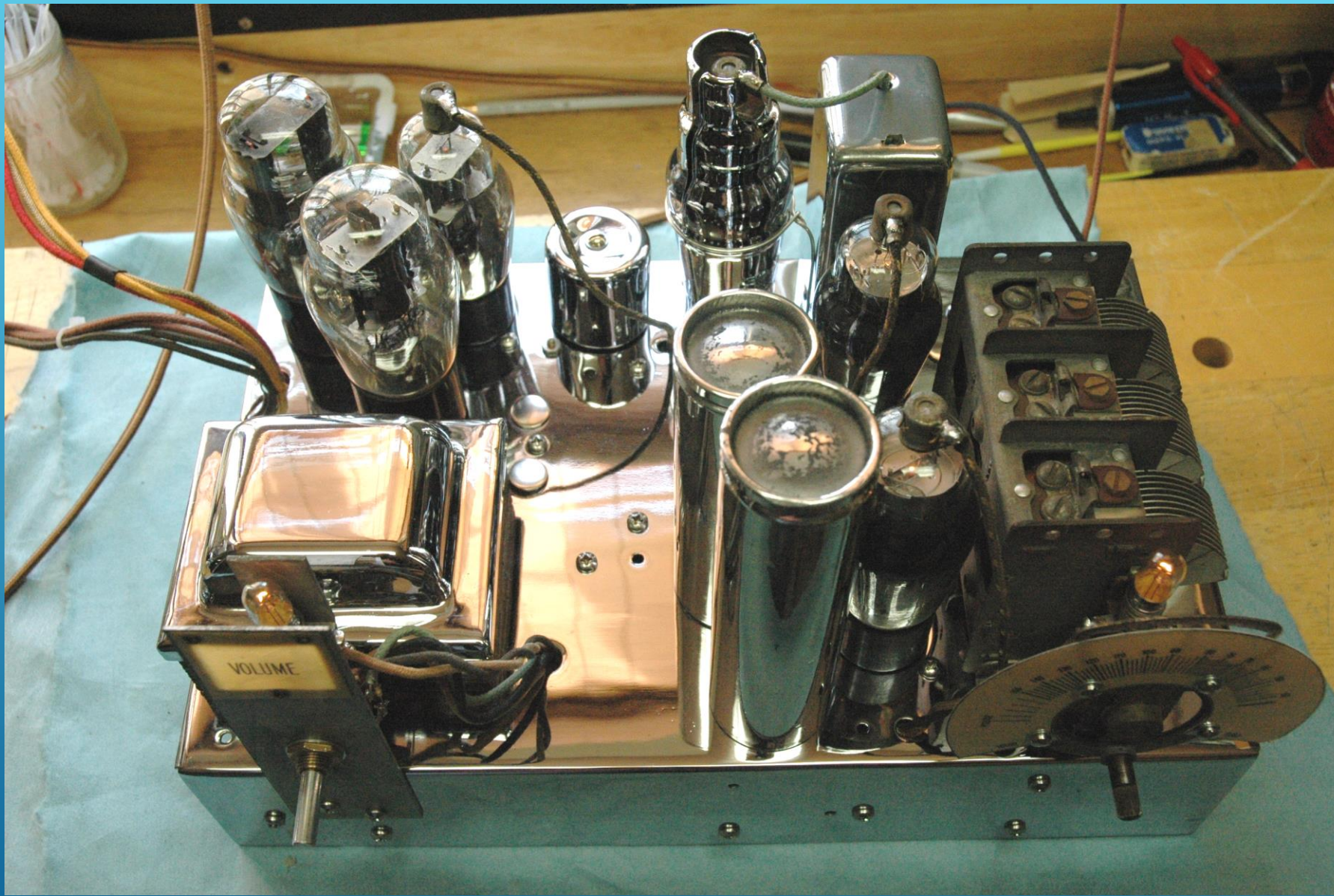














MAJESTIC 161



THE END

Thank you for your attention
Any questions or discussion?