

# RESTORING HIGH FIDELITY TUBE AMPS, A PRIMER



MID-ATLANTIC ANTIQUE RADIO CLUB

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# CONSIDERATIONS:

- Sound quality
- Collector value
- YOUR TIME!!



Sound quality usually, (but not always) equals collector value.

Spend time, and parts, wisely!

# TIERS OF VALUE:

- Tier 1: McIntosh (MC 30, 60 225, 240, C20, MZ-110, etc.), Marantz (8B, 2, 5, 7C).
- Tier 2: Fisher (X-202B, 300, 800 and 500, etc.) H.H. Scott (222, 299, 399, 130, etc.), Sherwood, Bell.
- Tier 3: Dynaco, Eico (HF-87, HF-30, HF-81), Heathkit (W5-AM, W6, and others), Lafayette, Knight.
- Sub-tiers may includes specific models from Harmon Kardon, Lafayette, Knight, Bell, etc.

This is not a comprehensive list, but is primarily what is you are likely to run across



# RESTORATION TECHNIQUES:

- Tier 1: due to collector value, restoration must be with a “light touch” and preferably with period correct components where possible.
- Tier 2: much lesser in value, these can be restored with more modern components of good quality. Also, some (Fisher 400 as an example) can be upgraded via circuitry changes to improve deficiencies in design.
- Tier 3: lesser in value but often of good sound quality, mostly changes/upgrades in components and changes in circuitry where appropriate (note the Dynaco ST-70 buggery).
- Other tiers/sub-tiers can be treated in a similar fashion with regards to collector value and restoration techniques.

# COMPONENTRY:

- Resistors: carbon film, Brown Devils, deposited carbon power resistors. Fisher was one of the earliest to use these (sourced from Germany). NO – metal film, metal oxide, carbon composite, monkey coffins.
- Capacitors: film and foil types, such as Sprague 716P (low cost for lower tier), vintage West-Caps and Vitamin-Q, Russian K-40 and others. NO metallized film caps!
- Power supply caps: German F&T where possible, film caps where possible (space and position in power supply), Hayseed Hamfest custom cans, CE can caps.

# HARMON KARDON CITATION V AS AN EXAMPLE

- Part of the Harmon Kardon Citation series, this is a Tier 1.5 amplifier, wonderful sound quality, not at the collector value of the Tier 1 amps. This particular example came from a MAARC auction and was purchased at a good price, however, there was significant corrosion and paint bubbling as well as a missing bottom cover that devalues this unit significantly below its normal resale value of a restored unit. In fact, this unit (which was a kit model) required a complete teardown and rebuilding to achieve a successful return to service and better-than-original sound playback quality. Unfortunately, the “before” pics were lost and cannot be shown in this article.

# CITATION V, TOP OF AMP



Noted is the new tube sockets and the repainted transformers which were rusted

# TOP OF CITATION V



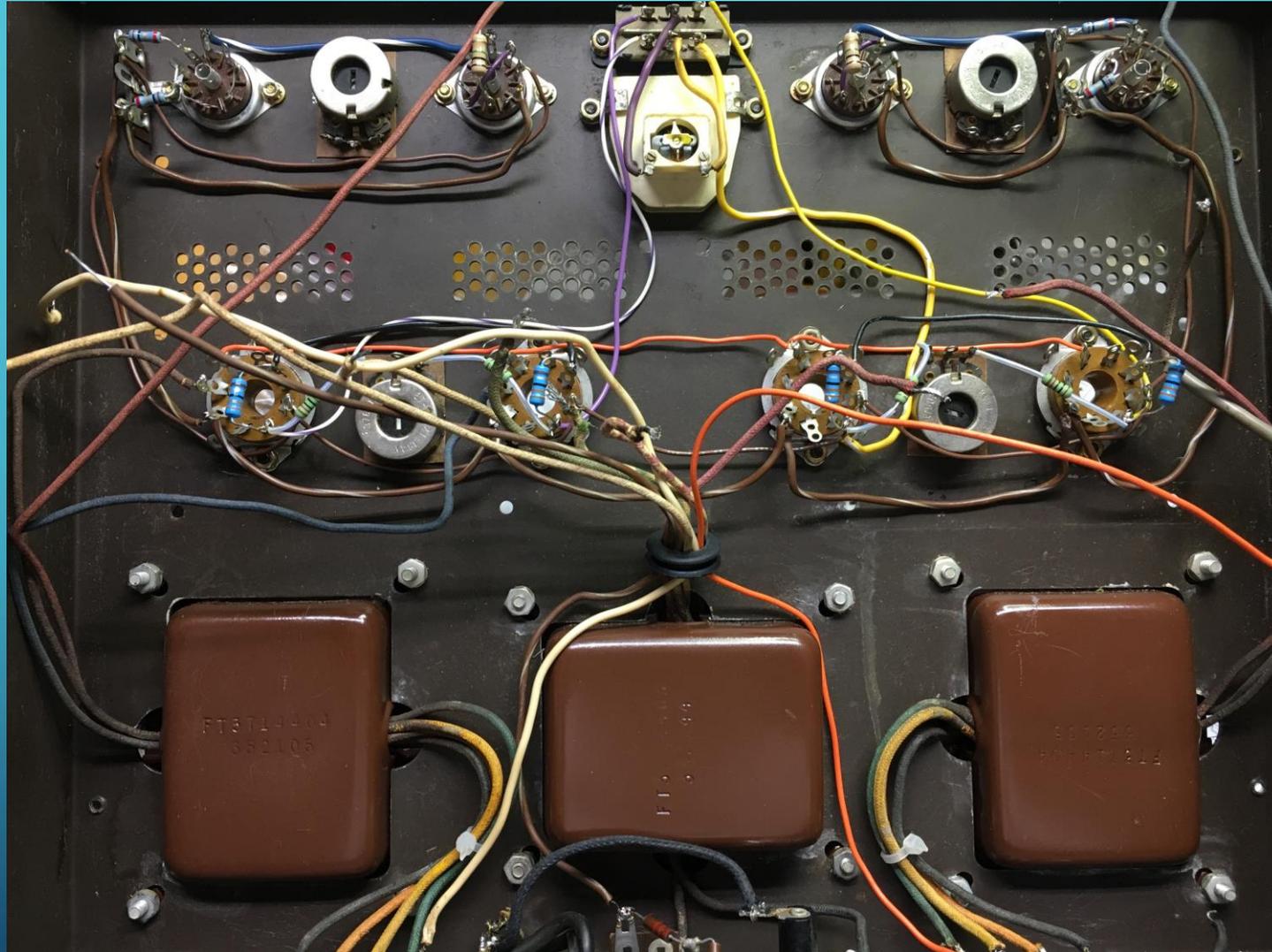
Note the repainted transformer bells and lams, also the buffed chassis

# TOP OF CITATION V, #2

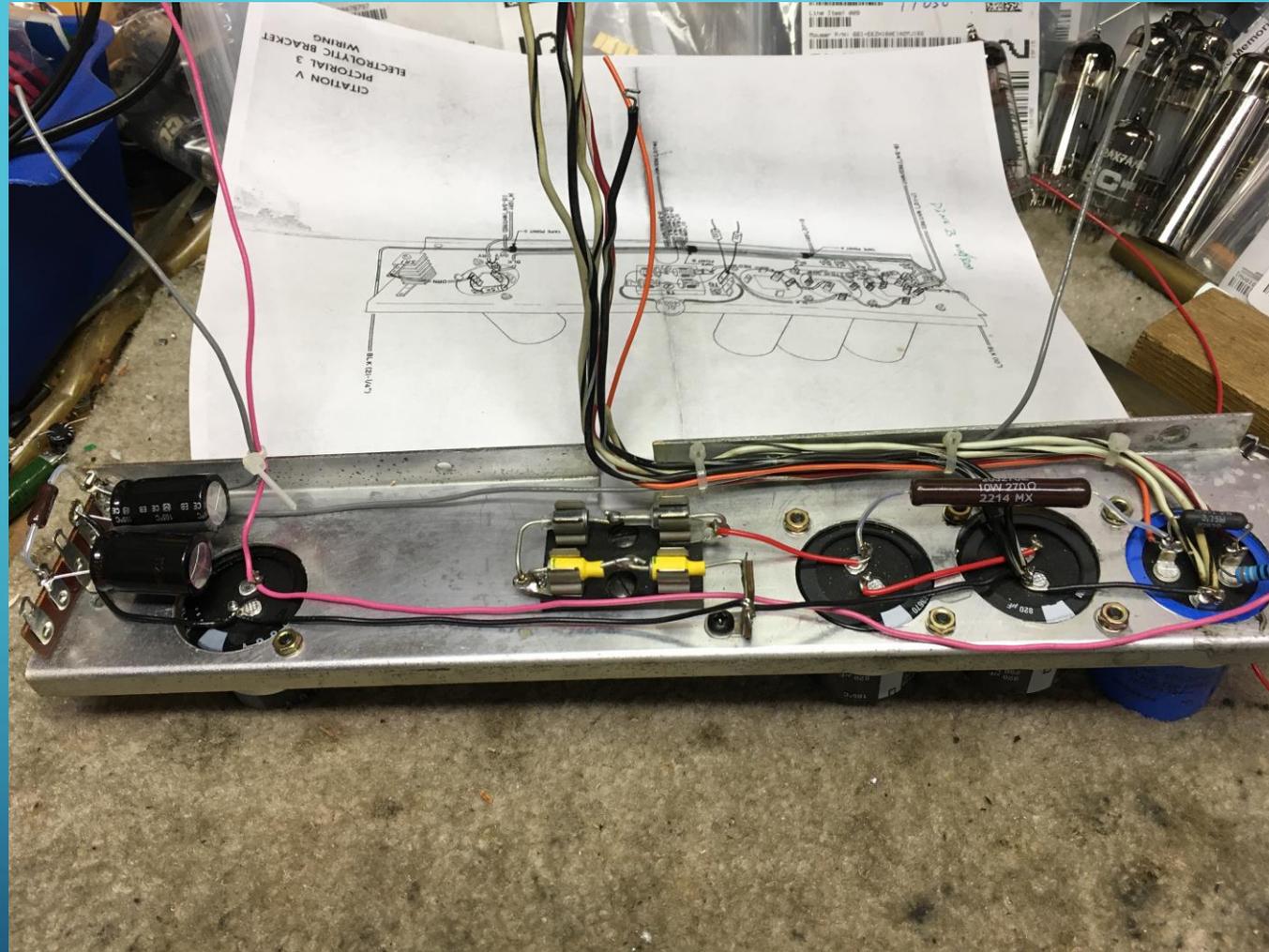


Note the screw heads here, these are the original which will be replaced but gives an indication of the degree of corrosion of this unit before restoration

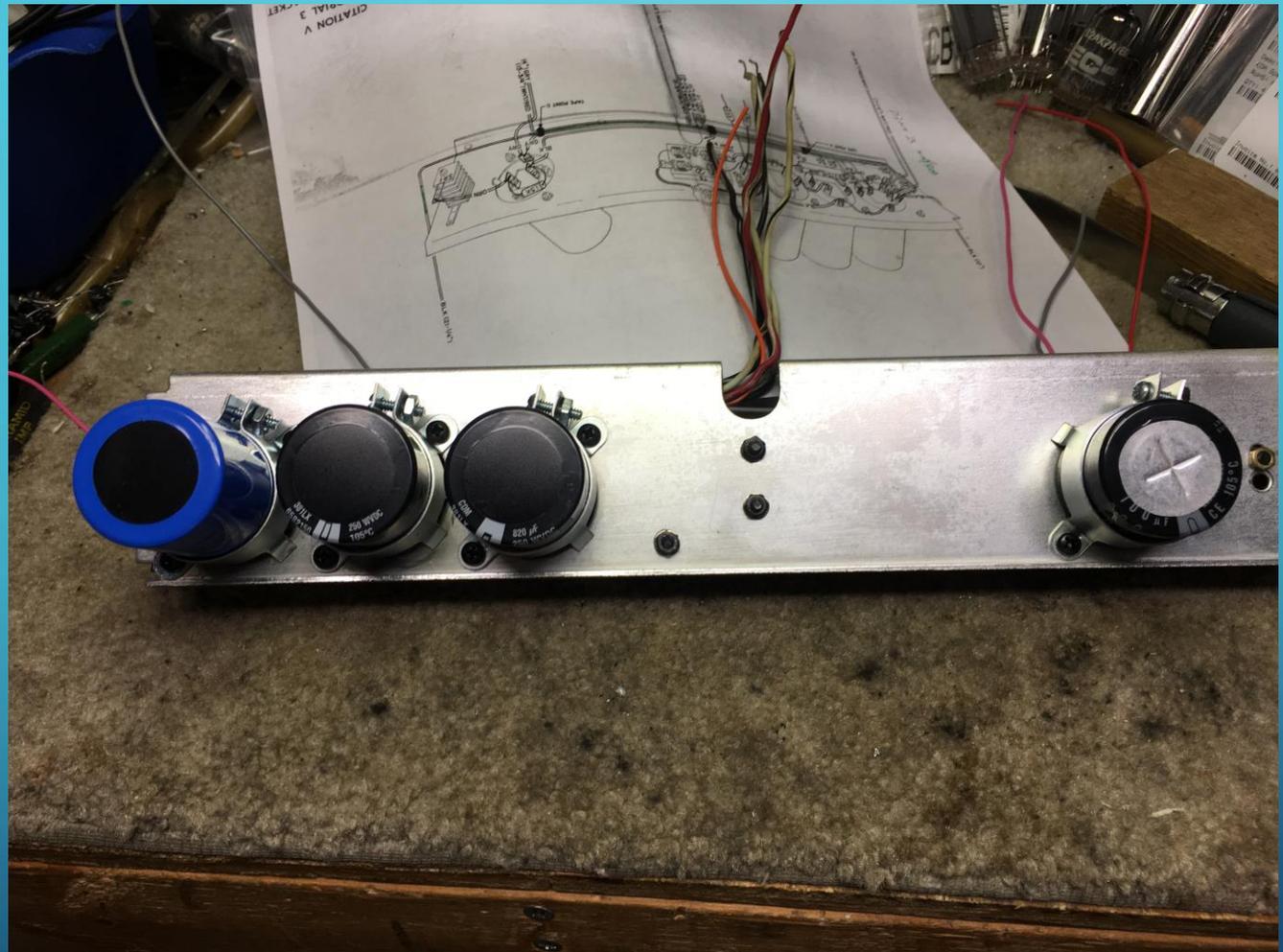
# CITATION V, BOTTOM BEFORE WIRING POWER SUPPLY IN



# CITATION V, POWER SUPPLY REBUILD TOP

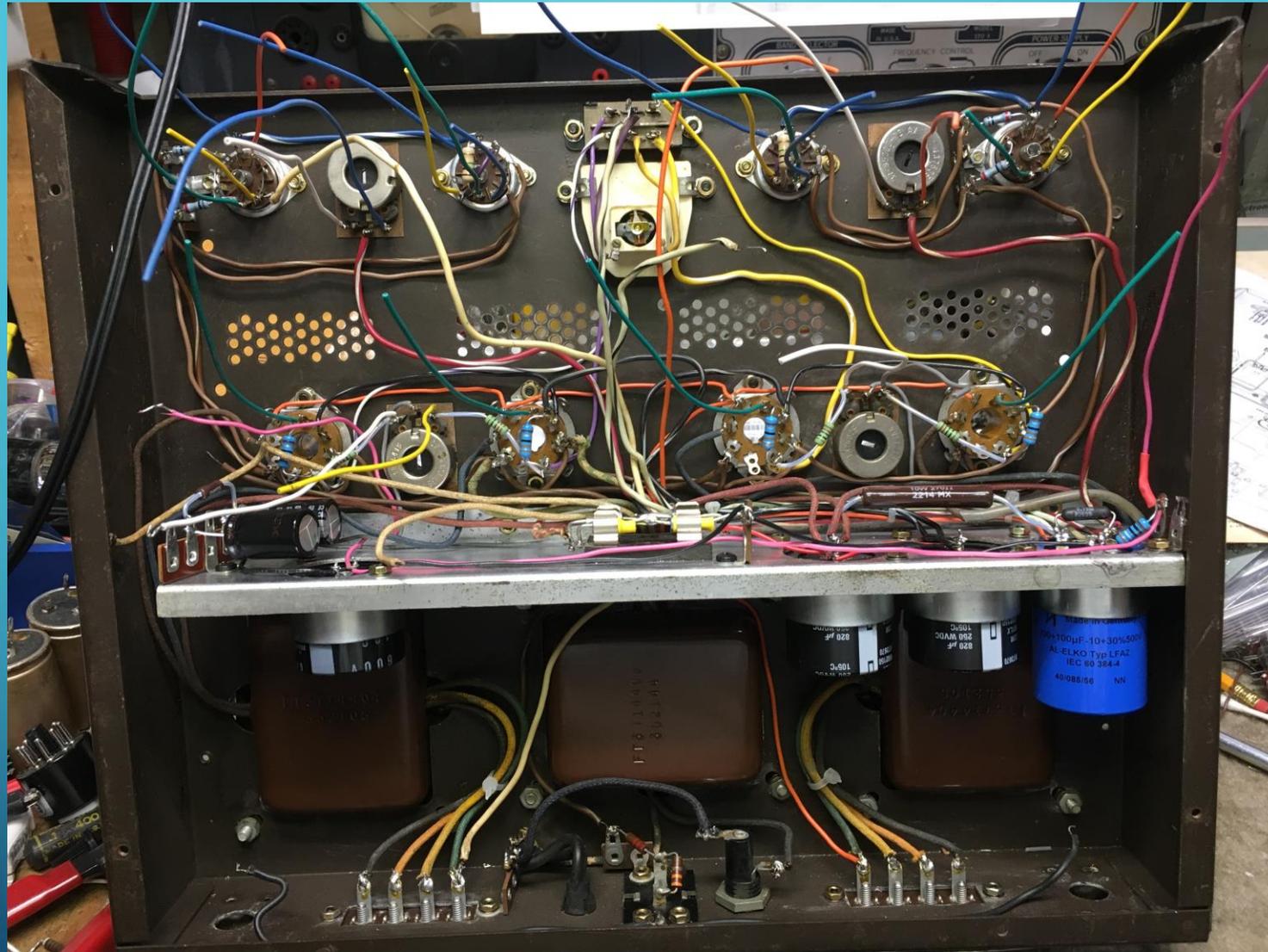


# CITATION V POWER SUPPLY REBUILD BOTTOM

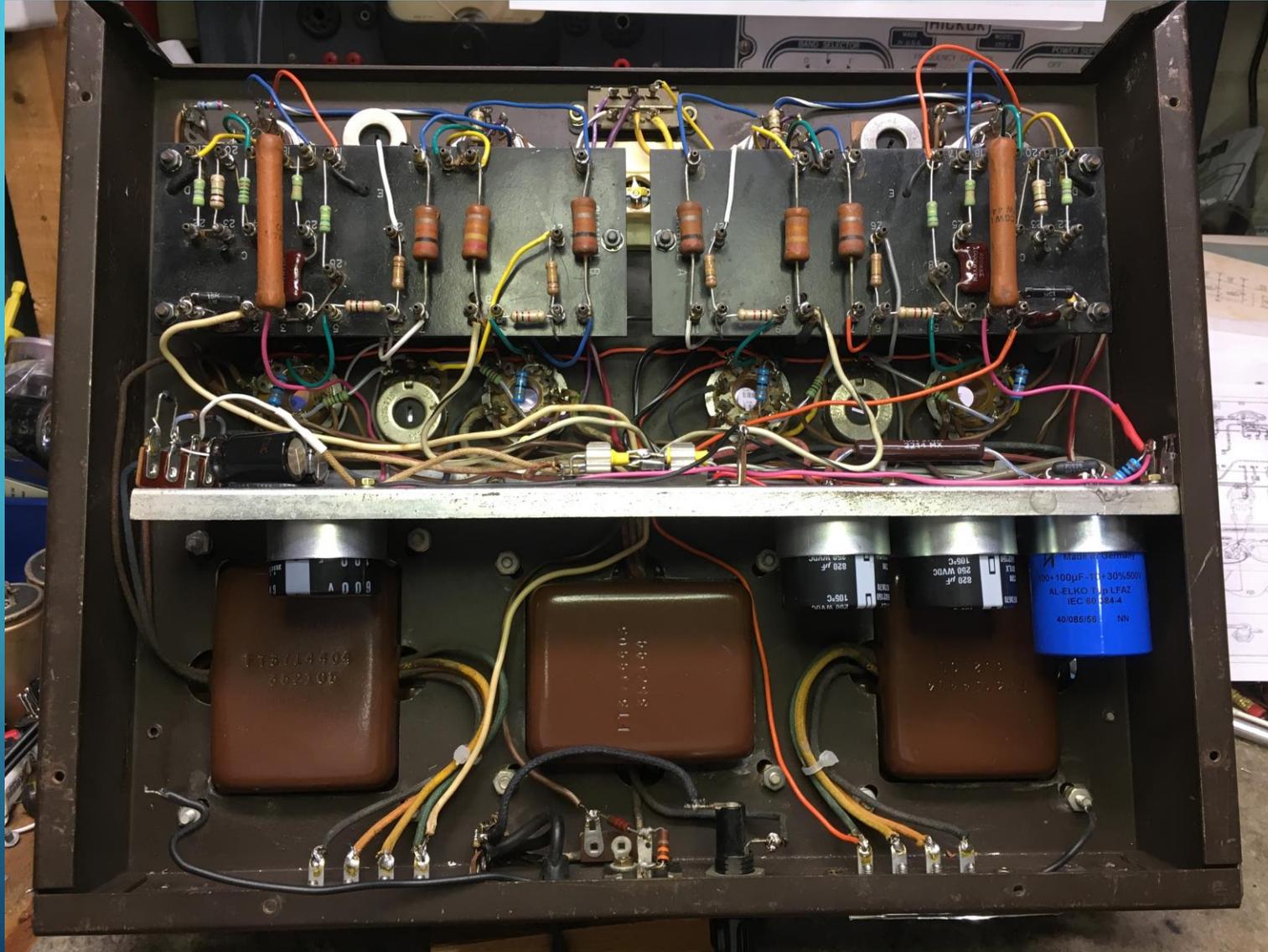


This is a modification upgrade using the Jim McShane power supply parts using F&T can caps

# CITATION V BOTTOM, REWIRING THE TUBE SOCKETS AND BIAS POTS



# CITATION V, ADD THE REBUILT COMPONENT BOARDS



# SOME OF MY GO-TO GURUS!

- Jim McShane for Citation guides and parts.
- Audiokarma – best site on the web for helpful (mostly) guides and gurus.
- Dave Gillespie – very knowledgeable, particularly Fishers.
- Audio Asylum – another site on the web, but increasingly infected (last time I checked) with knucklehead no-nothings.
- HiFi engine – schematics and manuals
- Vinyl engine – for turntables