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– **The Early 500 series (TS500/510/511) by: N8CBX**

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Kenwood's Early 500 series

Presenter – Mr Jan Servaites (N8CBX)

TS-500 / PS-500AC

TS-510 / PS-510
(Allied A-2517/A-2518)

TS-511S / PS-511S

Topics in this lecture:

- Brief introduction to the models
- General comments & tips on each model
- Repair notes & vendor parts
- Including modifications that I added

Hamvention Forums 2017

Kenwood Hybrid Radio Legacy

Rm 3, 1:00pm – 2:00pm

Saturday, May 20 2017

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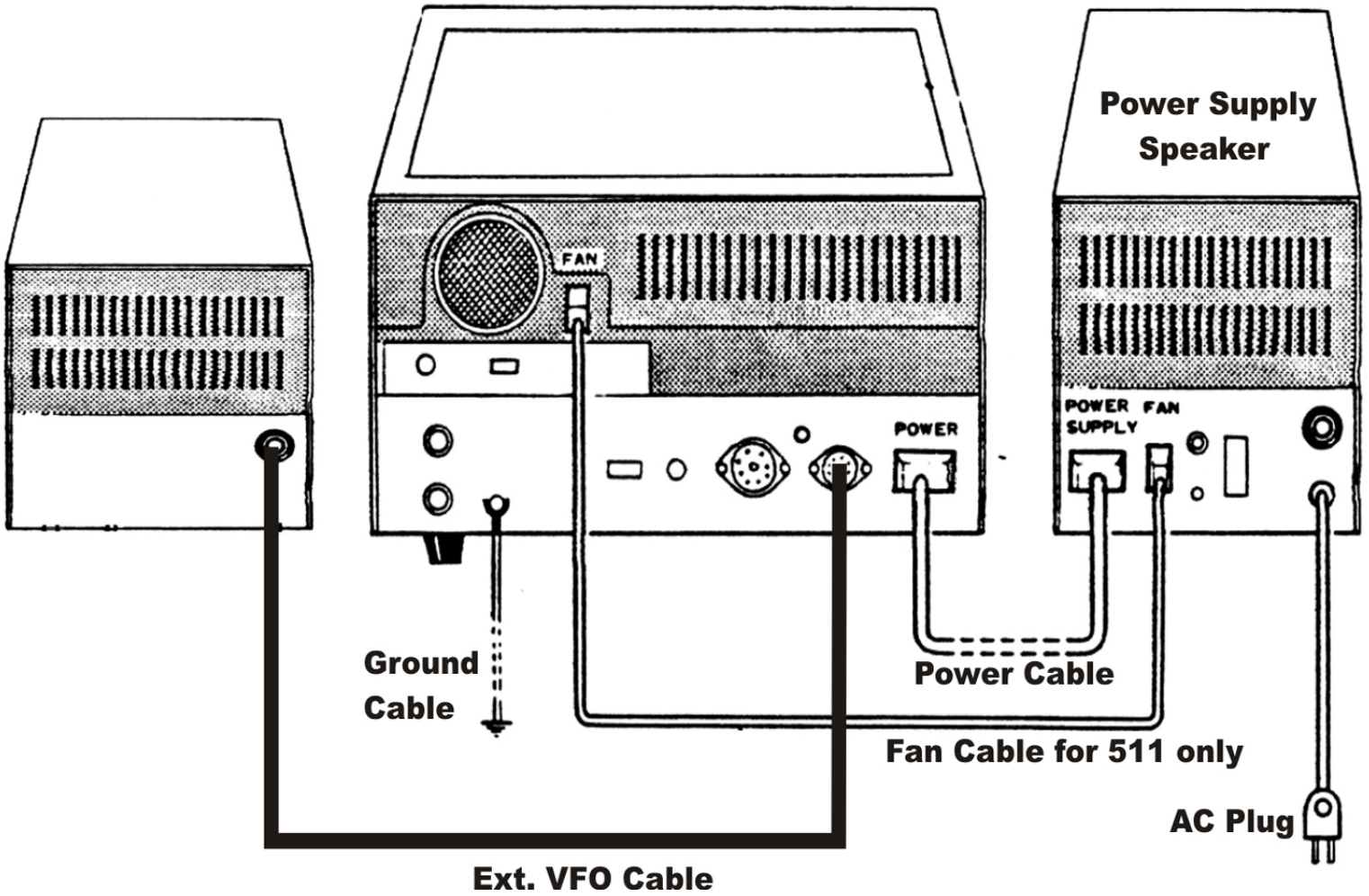
VFO-5
VFO-5D
VFO-5SS

TS-500
TS-510
TS-511S

PS-500AC
PS-510
PS-511



TS-500

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1st Generation of the 500 series

Followed by: 510, 511S, 515S, 520, 520S/SE, 530S/SP, 570DG/SG, 590S/SG

SSB, AM, CW, 17 tubes, 3 transistors, 15 diodes

Comments & Tips:

- Purchased from Miguel Sousa, CT1FSQ, Portugal
- Remote VFO capable: "VFO-5" (VFO-5SS from 511 will work).
- Chassis power jack different than 510/511/520/820 (change out).
- PS-500AC not the best (no regulated 150vdc); I use the PS-510 & cable.
- Freq. marker xtal (HC-6U, 100kHz) not supplied (use 520 xtal).
- VFO dial: 80/40M range in red CW; 20/15/10M range in black CCW
- No "SG" switch; I added an SG on/off switch; Neutralizing tubes is easy now.
- RIT pot is constantly on; Needs RIT pot w/on-off switch installed.
- VOX capable, works good.
- Heaters constantly on when operating; No PA cooling fan. Operate with top cover open.

17 Tubes:
S2001 2ea
5763 driver
6BA6 2ea
6AW8A
7360
6BZ6
6AU6
6BE6 2ea
6BL8
6AQ8 2ea
6AQ5
12AX7
OA2 V reg.

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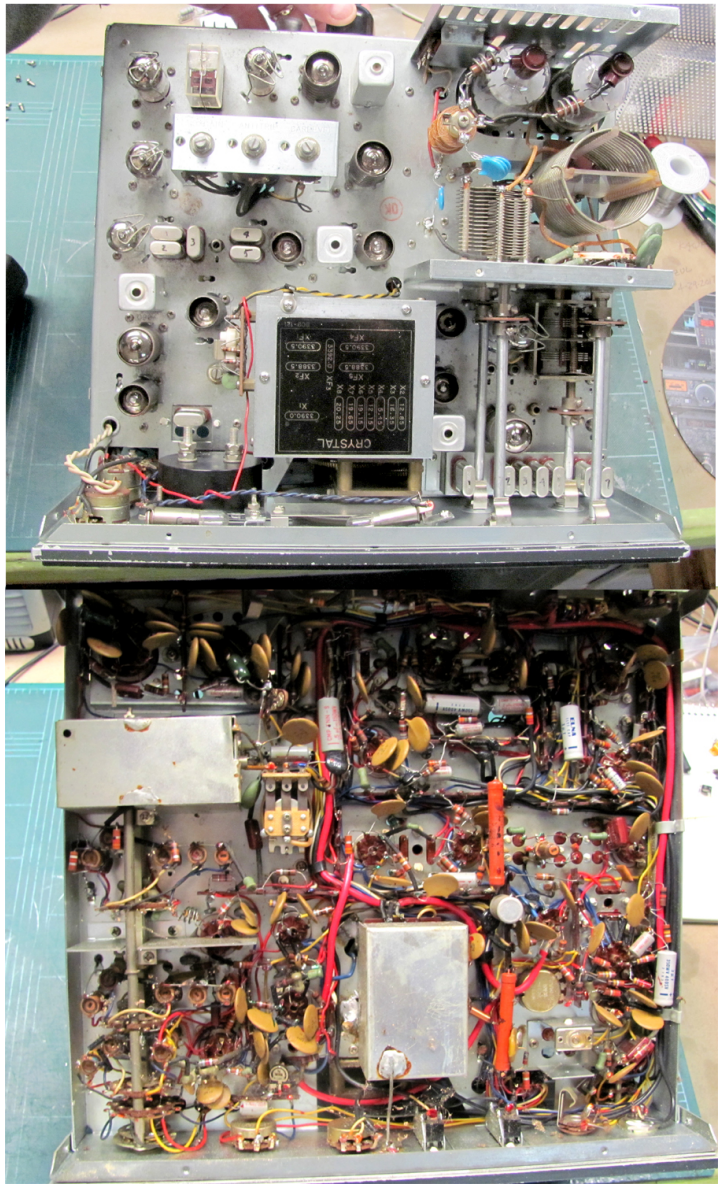
TS-500 – Top/bottom views

Repairs:

- Cleaned completely (except band switches, just applied Deoxit contact cleaner)
- PA repair (blown cath. resistors)
  1. Cath resistors & bypass caps
  2. PA HV blocking/bypass caps (K4EAA kit)
  3. SG on/off sw
  4. Ip + HV multiplier resistors
  5. HV meter adj. pot
  6. Included cath protection diodes, 3ea 1N4007
  7. New 6146W tubes, 2ea

•Replaced power jack w/520 (to use with the PS-510)
•RF Gain pot wire broken
•Cap in mic signal line broken
•Replace bulbs: #1892, 0.12A, (MCM, 25-925)
•Re-alignment



Point-to-point wiring; Minimum PCBs

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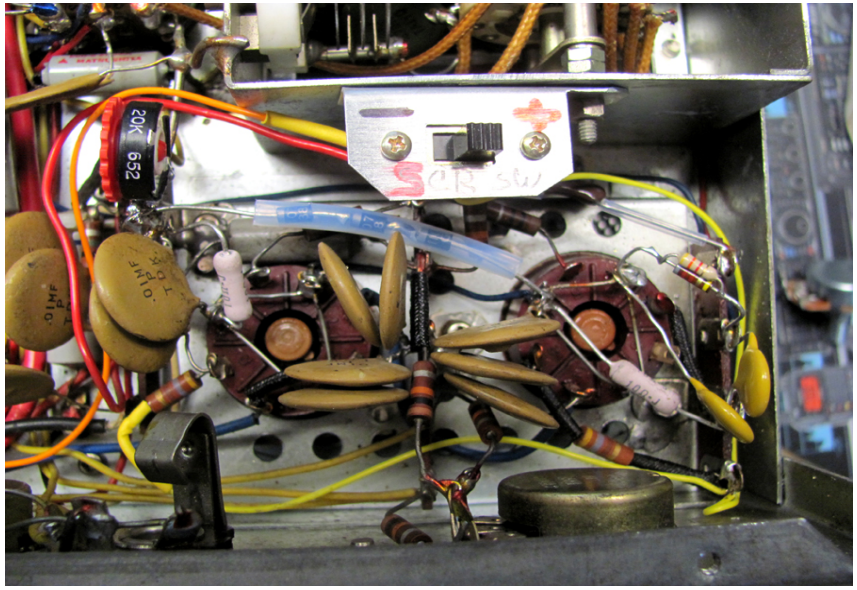
TS-500

- Added screen voltage on/off switch
- Also cath. protection diodes



PA cage bottom view

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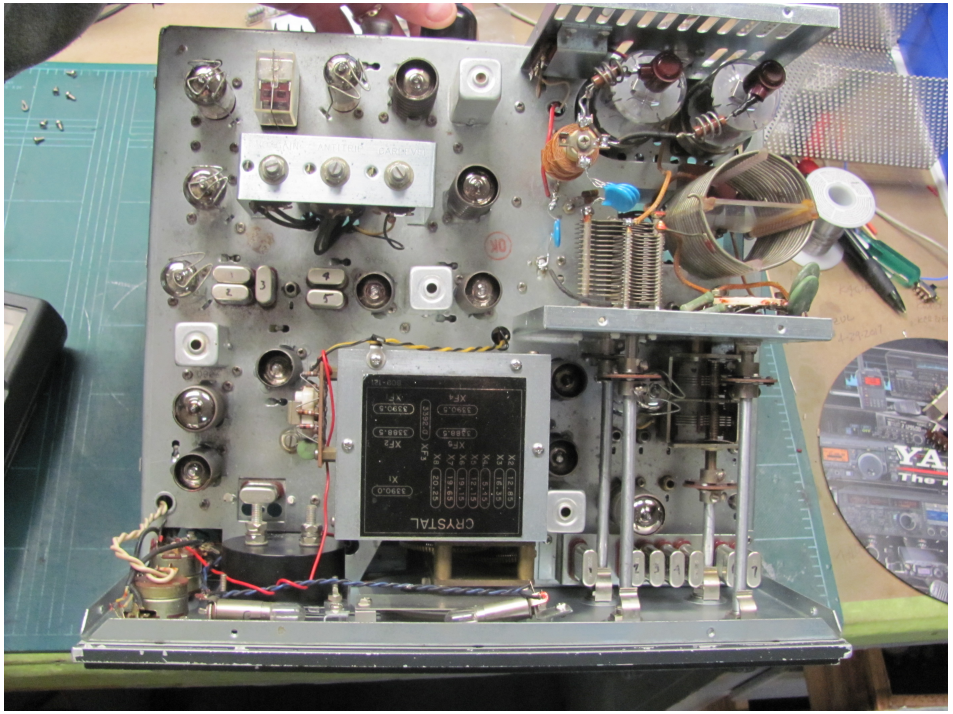
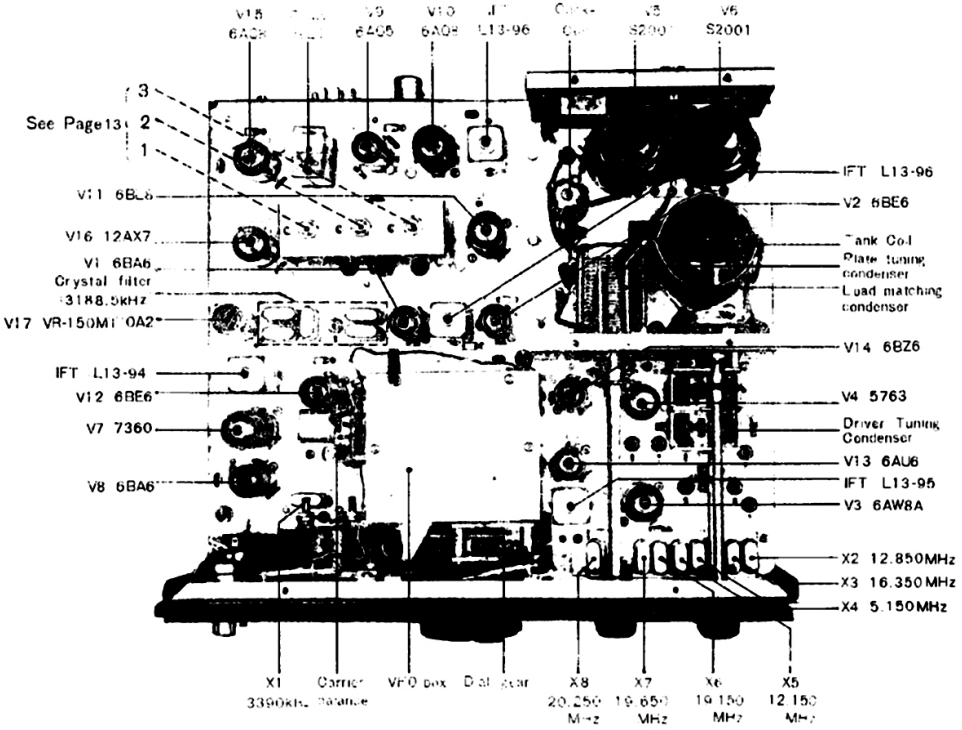
TS-500





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TS-510 (Some re-badged as an **Allied A-2517**)

SSB, CW, 14 tubes, 2 FETs, 13 transistors, 29 diodes

<u>14 Tubes:</u>
S2001 2ea
12BY7A
6AW8A
6CB6 2ea
6BA6 3ea
6GH8A 2ea
6BZ6
6BM8 (PS)
6GH8

Comments & Tips:

- I have the Allied A-2517 radio & A-2518 Power Supply; A-2519 VFO (VFO-5SS will work too).
- The Allied comes w/installed CW filter; Chrome cover screws (Deluxe model of TS-510)
- Heaters constantly on when operating; No cooling fan. **Operate with top cover open!**
- Only use with PS-510; PS-511 is a little under-powered in current output. Plug pin-outs are the same.
- PS-510 includes 150vdc regulator; Uses 6BM8 as series pass regulator, using neon bulb as V ref.
- Better regulation using 1N4760 68v zener in place of neon bulb as V ref., Better, but still not that great.
- Mini-trim pots need replacement, as well as Bias & Carr.
- Move Carr trimmer to topside for better access
- Three belt drives for RF circuit tuning & PA load cap; (ceitron.com, 3ea belts, p/n RXL7.4)
- Relay coils are 100vdc. New replacements available (Mouser, Omron MY4-100/110vdc), including sockets.

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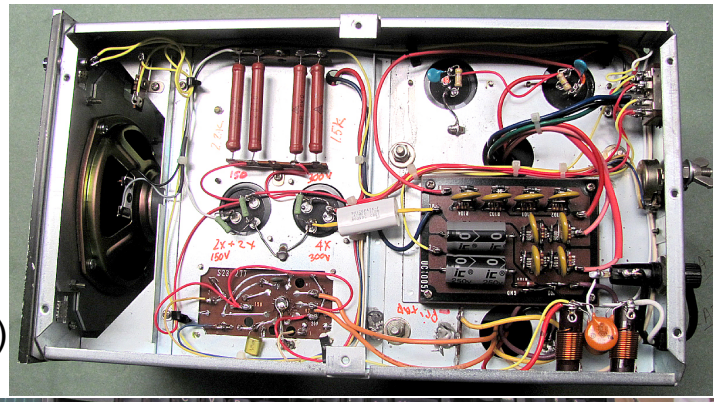
TS-510/A-2517

Comments & Tips, continued:

•PS-510 is very heavy; interconnecting power cord is 7 feet & too long (24” is much better)
•PS-510 rebuilding; Replaced caps in HV, Scr & Grid voltage supply. New speaker
•VFO 9V regulation is poor. Fab’d 9V regulator that works better
•RF driver coil pack is used for both RX and TX. The 520 has separate RX & TX coil packs.
•Very critical to follow 510 service manual’s procedure on coil adjustment for best performance.
•Adjustment sequence is for (Stand’d Sig’l Gen’r) SSG & VFO frequencies: 3.750, 28.800, 21.225, 14.175, 7.150
•Run any 117VAC radio using a variac



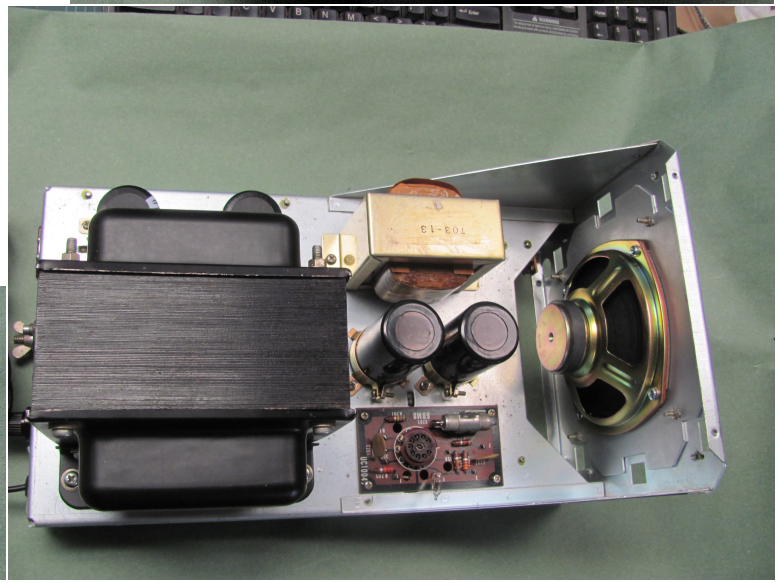
PS-510 Rebuild

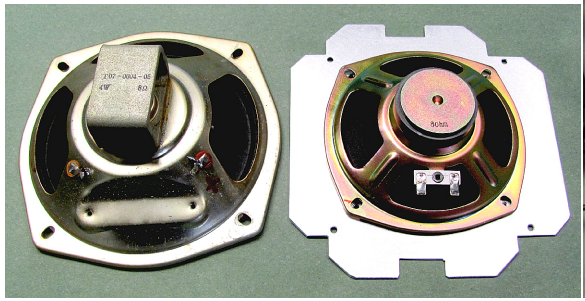
Replacement Capacitors:

1. 2ea, 150uf 500V (Mouser 647-LGN2H151MELC25)
2. 1ea, 0.47uf 600V (Mouser 598-941C6P47KF)
3. 1ea, 47uf 250V (Mouser 598-474MWR250K)
4. 2ea, 47uf 250V (Mouser 647-TVX2E470MCD)
5. 2ea, 100/100uf, 500V (Antique Electronic Supply C-EC100X2-500)

Misc. Parts

1. 1ea, speaker (MCM 55-4602) & homemade adapter plate
2. 9ea, 1N4007 diodes
3. 1ea, 68V, 1N4760 zener
4. 1ea, 0.1uf, 100V bypass cap across the zener
5. Replace any wire with type PTFE-E20awg



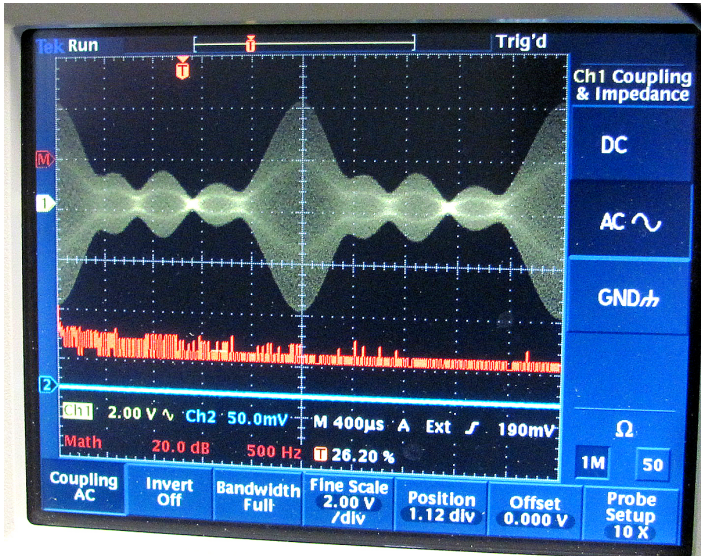


TS-510/A-2517

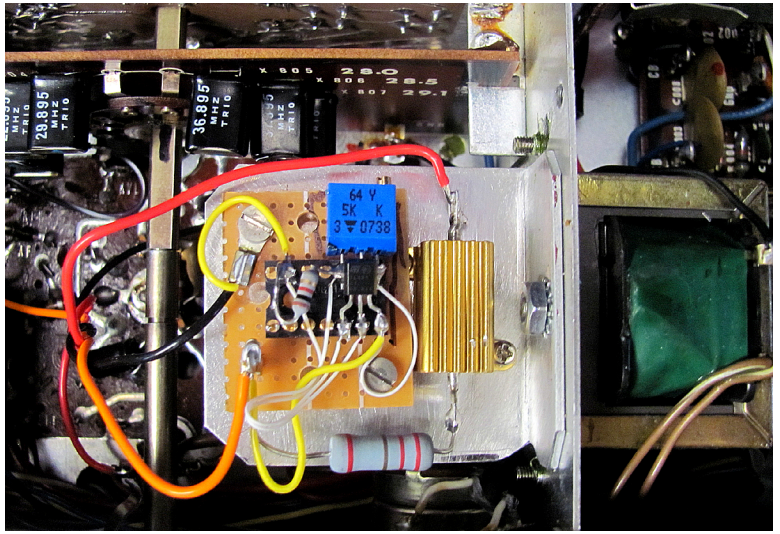
Repairs:

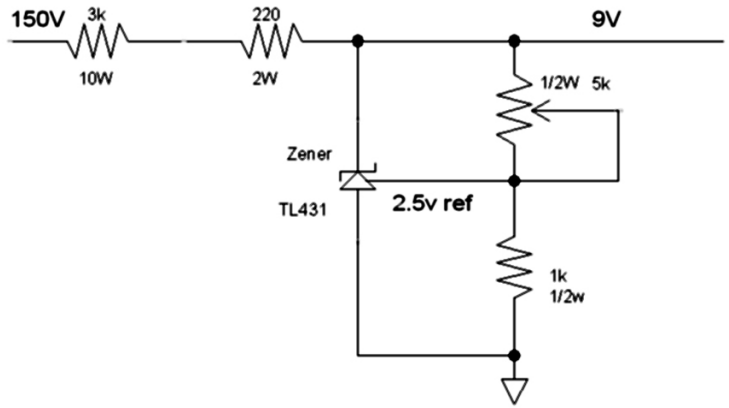
- Cleaned completely & de-fluxing boards & band switches
- PA repair (blown cath. resistors)
  - Cath/screen/grid resistors & bypass caps
  - ALC components
  - PA HV blocking/bypass caps (K4EAA kit)
  - Ip + HV multiplier resistors
  - Cath protection diodes, 3ea 1N4007
  - New 6146W tubes, 2ea
- Homebrewed 9V regulator using TL431 zener (Mouser)
- Replace bulbs: #1892 0.12A, (MCM, 25-925)
- Re-alignment
- Replace rubber belts (3) p/n RXL6.6; 0.139" dia x 6.6" circm; Order from ceitron.com

600kHz band pass filter adjustment



Homebrewed 9V regulator for VFO & RIT
Mounted on heat sink





9V regulator