

Electronic Renovation

<1980

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Why?

- Old Tube Era Gear

- Mostly caps, Res, Trans, tubes
- Tubes: reliable & cheap (\$.25 to \$2)
- Simple to understand
- Large signal
- Cheap test gear
- Cheap to buy!!!

- Modern IC Gear

- Mostly ACICS, Ics, Precision everything
- Custom parts \$\$\$
- Hard to understand
- Small signals
- Expensive test gear
- Fix by swap
- Expensive

What I will not discuss tonight

- How to pick out gear worth repair
 - What it is worth, as-is & fixed
 - Where to get it
 - How to use it in a “modern” station
-
- So... on to the renovation!

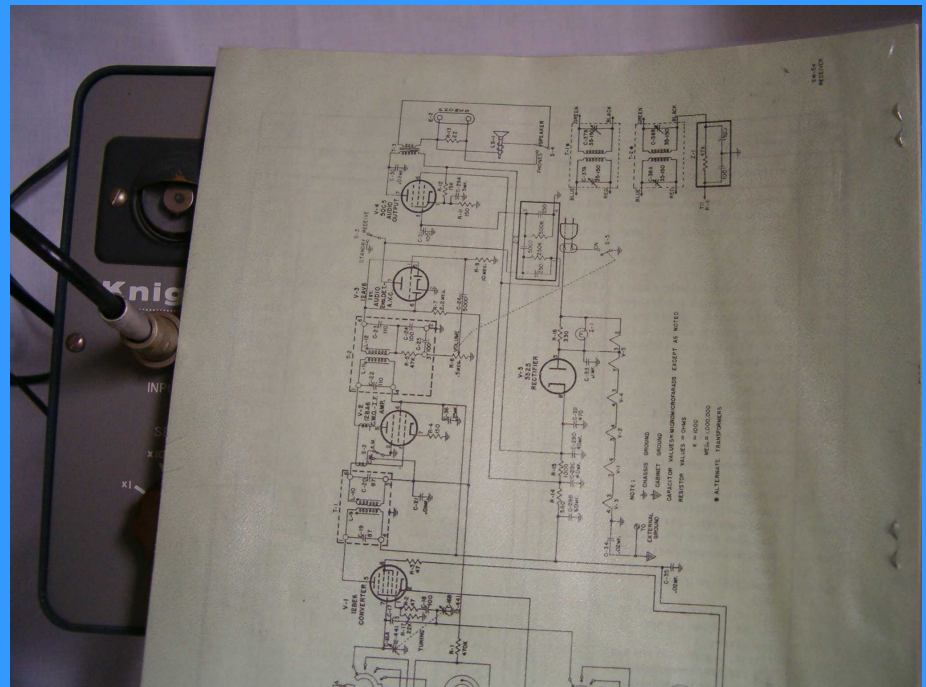
Safety

I know, real men don't wear no stinking safety glasses.!@#\$\$%^&*

- Safety Glasses
- High Voltage: -130V @ 10 ma to 3000V @ 1A
- High Current: 13.8V @ 30 A
- Chemicals: Pb to PCBs (transformer & cap oil)
- Fire & explosion: Old Capacitors & Other stuff
- Mass: dropping on your foot!
- Cuts with contamination
- Getting beat on price: All EBAY descriptions are LIES.

Critical Gear

- First is Data: Schematic
- Service manual
- VOM/VTVM/DMM
- Soldering Iron 25-60W
- Cleaning supplies
- Tube checker
- Small shop tools, etc...
- Laundry sink---Water
- Old Handbook/magazines



Process of Renovation

This is what “I” do, others have their own process!!!

- Is it an Antique or just OLD?
- Wipe off with paper towels
- Remove:
 - Knobs,
 - Case,
 - Feet,
 - Speakers
 - Meters
 - All water sensitive stuff, paper, cloth etc.
 - Plug transformer/chokes input wire hole with putty

Electronic Renovation Cont'

How "I" do it...

- Spray with "Simple Green"
- Fantastic, 409 etc contain Phosphoric acid:: Will Etch aluminum & Eat paint & Decals
- Use soft to stiff brushes to clean soiled areas
- Clean again and rinse,
- Use compressed air with care to "Dry" (variable Caps!)
- Wash knobs in paper cup, careful of white line marks
- Dry everything for a day or so
- Repaint case as needed. Custom spray can matched Home Depot

Old is not always GOLD

- **Capacitors:** Replace all Electrolytic (Especially leaking!)
- **Resistors:** All age high, replace >20% power resistors always suspect!
- **Transformers:** Usually OK, but test for insulation,
- **Tubes:** check conductance or at least emission, often Good!



Chemicals

Better living through Chemistry!

- **Safety:** Always in a well ventilated Area, outside or use hood,
- **Solder Flux:** Remove it by Spray & Brush
- **Lubrication:** Contact Cleaner
- **Corrosion:** NOT WD40! first on switches try Deoxit D5
- **Intermittents & Drift:** Circuit Freeze!



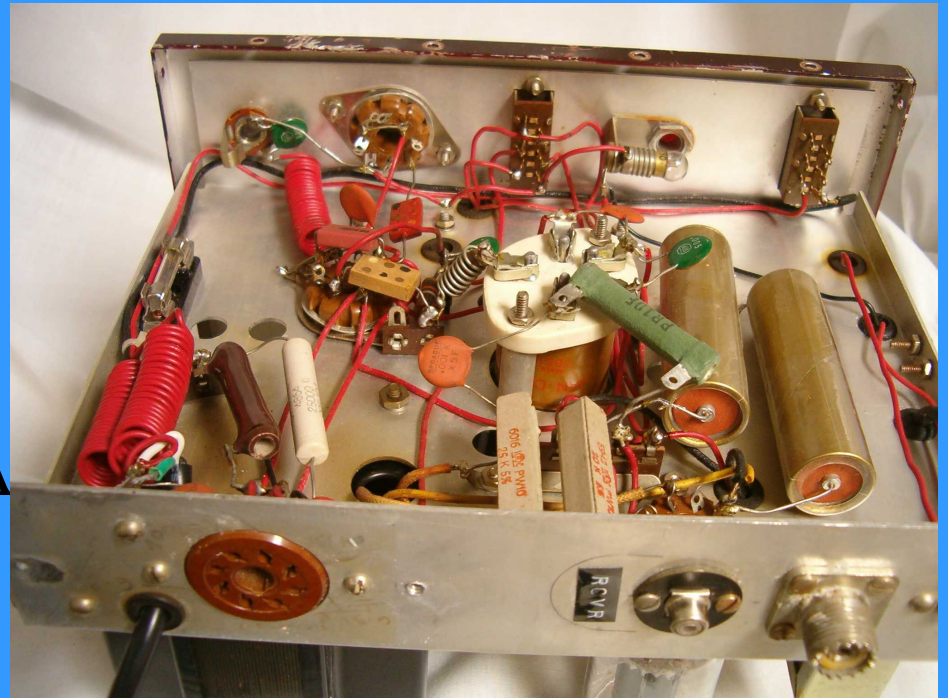
Parts to Replace

- “Good” Electrolytics
- All Selenium Rectifiers
- Multi-component packs
- Old wire
- Rubber parts, Grommets
- Etc.



A nice Chassis ~1950s

- Electrolytics “look” good...???
- Power cord replaced :
2 wire for 3 wire
- Fuse installed
- SO-239 replaces RCA
Phone plug
- Clean & check
Resistor



Variac

The HP Way

- Sometime I “try” to save costly electrolytic caps
- Bring up power on Variac to 30 volts, watch current, 2-4 Hrs
- Then 50v, 70v, 90v, 100v, 110v
- Slow rise in current is OK. listen to rcvr hum



Signal Tracer

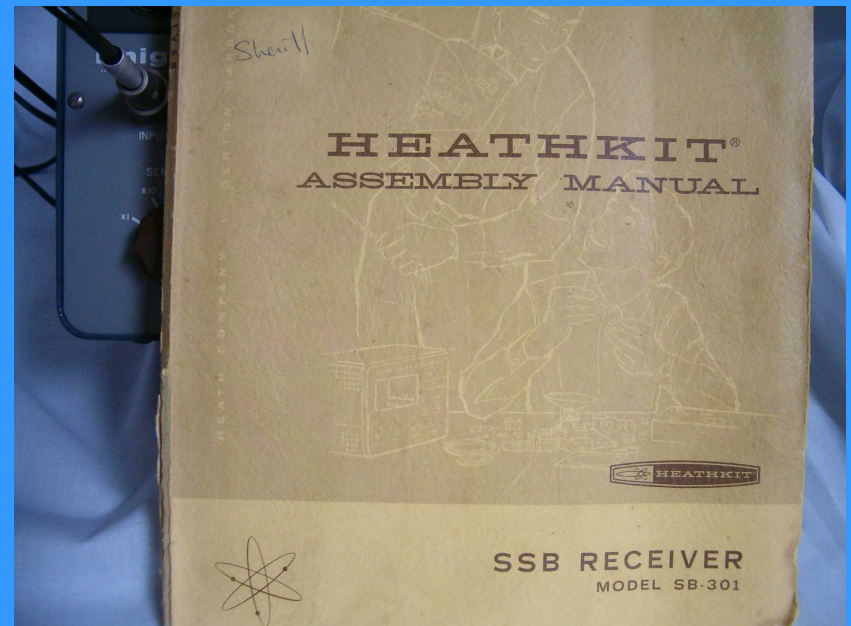
Knight... a fallen flag

- This device is a tube era test set for tube era gear!
- Note winking eye tube, upper left
- Has: test speaker, af & rf injector, Pwr meas., af amplifier, etc.



The Best of all Worlds

- An original Heathkit Assembly Manual
- Large circuit diagram-foldout
- update mod list
- Hint & kicks articles



WOW...but...

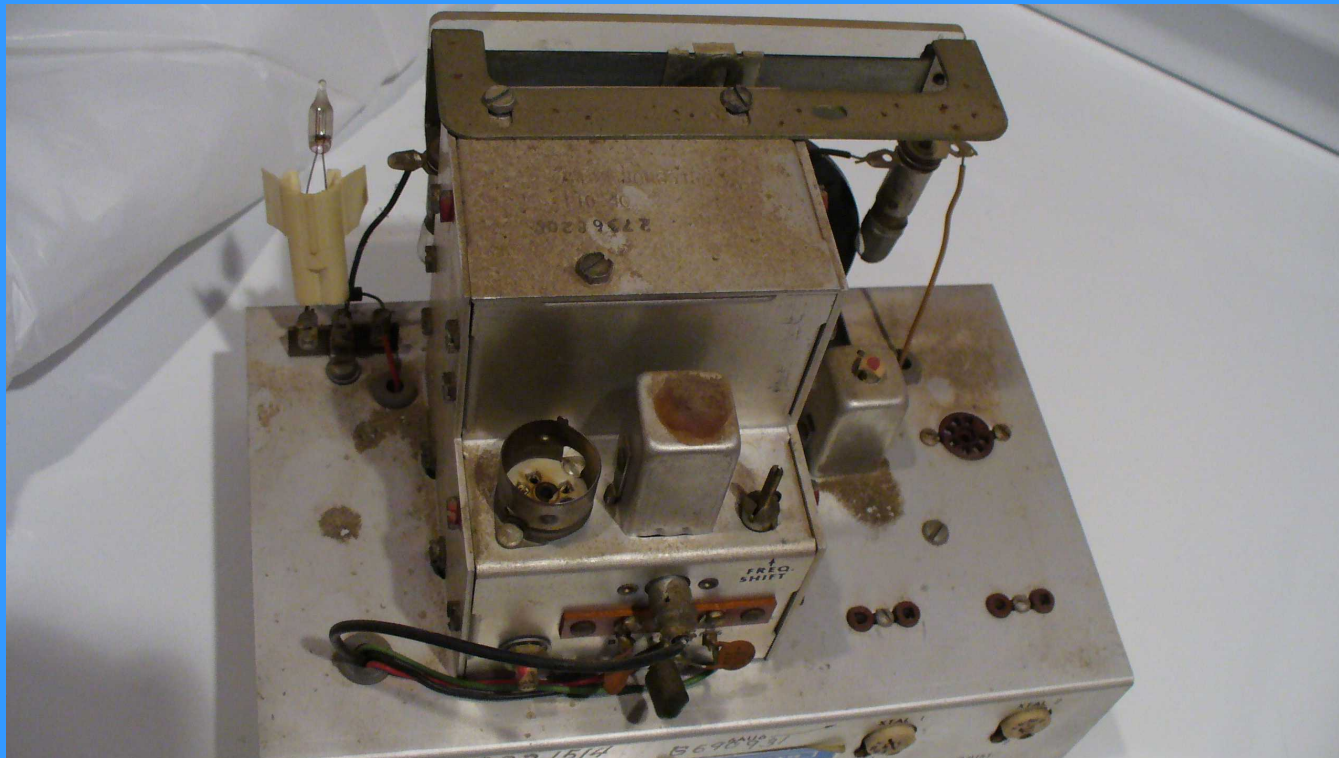
- Gear that is cosmetically great is a joy... usually



Resources

- DATA
- WEB based: ARRL.org-> QST.PDFs
- “Ham Radio” on CD
- BAMA for Schematics
- Old Hints & Kicks books
- Google
- Heathkit or Collins or Hammurand Book
- Old ARRL Handbooks ('60-'75)
- Parts & Supplies
- Fry's Electronics - > Milton, GA
- Ack Radio Supply - > Atlanta, GA
- Radio Shack
- Back of QST mail order
- Mouser Elect. Mail order
- Jameco
- Digikey (no min. order!)

Heathkit SB-640 “As-is” from EBAY



Heatkit SB-64- From “As-Is” from EBAY

