"KAR" Kansas Amateur Radio "KAR"

April Special

Hi Gang, I have to share this with you from Tom WØEAJ because this was before the "Plug-&-Play" days; some remember those days and some were TOOoooo young to remember. Orlan ur ed.

Disclaimer:

Because I'm an older guy (shut up, KØCDM !!!), I still believe in Kilocycles and Megacycles - you new guys can use kHz and mHz if you want, but personally, I prefer to celebrate the unknown brother of Hendrich Hertz, Otto ***Cycle****... see, Otto was really into engines and cars, and one day, whlle checking for loose spark-plug wires on a Maybach zeppelin engine, he got bit, and his brother Heindrich saw the sparks in another room - Otto REALLY discovered radio, but his hands hurt so bad, from that* ***ZAP****, that Heidrich wrote up the report for him, and got credit for it... Now, for the story:*

Sometimes, when I get tired of fancy-schmanzy new stuff, I start looking for something to resurrect or invent...

Must be why I had SO MUCH FUN building up something I was listening on this morning. Back when I was going to 7th. grade at Old Mission Junior High School in Mission, KS (1954-55), one of the kids in one of my classes got his new NOVICE license in the mail. After the excitement of opening that envelope from the FCC - well, most of us including him, didn't have a lot of disposable income back then, so he MADE his receiver out of an All-American Five "kitchen radio", and a Gonset *Super Six* HF converter http://www.radiomuseum.org/r/gonset_3030_super_si.html. I never forgot it, so when my cousin recently asked me if I wanted an old 1949 radio/record player (with an "anvil model" turntable), and a bad tube - I said yeah... especially since I had a pair of "Super Six's" already.

Faust Gonsett (yes, that's how he REALLY spelled his name) was quite a guy. Per a recent series of articles in ELECTRIC RADIO, it can be said that Gonset spawned a whole genre' of radio gear (the FIRST HF transceiver - the G-76 http://www.rigpix.com/gonset/g76.htm)... also, not the least of which was the SBE and SWAN transceiver lines. The very CONCEPT of "transceiving" was pretty remote, save for things like the ill-fated COSMOPHONE and Polycomm 6&2 radios, along with a couple of others. Gonset, realizing that many hams wanted to run mobile HF, and in spite of those BIG dashboards made of real STEEL in the 1950's, a transmitter AND receiver took up a lot of space and drew a lot of current. Thus was born the converter - simply put (for you newer folks), it converts the 75, 40, 20, 15, 11(*), & 10 meter bands to an I.F. frequency; in this case, a frequency in the AM broadcast band.

What you did to make it all come together, was to plug your car-radio antenna into one jack, your HF antenna to the other jack and the output cable from the converter INTO THE (now empty) CAR RADIO antenna-jack. Power for filaments and B+ (nominally 90-150vdc) came from the car radio, it'self, as automobile-radios were tube-type, back then in the 50's. Normally, the car radio would use the existing antenna, but when you wanted to listen to HF, you simply turned on the converter (which also switched the antenna feed), and tuned the radio to the I.F. frequency... (most Gonsets were 1430 kcs). It used the car radio for the I.F. section, detector & AVC sections, and audio output.

Amazing performance was had from these little 4-tube converters, which came in 75m only; 75, 40, & 20m;, 75, 40, 20, 15, & 10m; 6m; & 2m versions. Later on, Gonset made the Super 12, which used 12vdc for the special low-plate-voltage tubes inside.
http://www.qsl.net/la5ki/org/go/super12.jpg Ameco made a couple of converters, and Regency made one of the first transistorized examples.
http://www.miami.muohio.edu/president/personal/w8zr/vintage/receivers/atc1.htm The best part was that your girlfriend actually had a place to put her knees, under that big dashboard, without all that hanging "heavy iron" underneath. (stuff a Multi-Elmac AF-67 & PMR-7 under there, and you're running out of girlfriends, pretty quickly)

Now, back to the old radio

I took the chassis out of the 1949 cabinet, and brought THAT back to Denver, replaced all the electrolytics, ripped off the back-panel loop antenna & "elevator coil", along with the dial assembly (rewound the dial cord only around the tuning shaft and variable cap "wheel" - for "I.F. TUNING")... installed an auto-antenna jack*** in the chassis for the converter output plug, and built a 1-transistor BFO (injection frequency - 455 kcs +/-); it's built on a little piece of perf-board and uses a single 2N2222 and a surplus transistor-radio 455 kc I.F. can. It only uses 3vdc max, so how to power it without resorting to batteries?.. I connected to the filament line (6.3vac nominal) through a single diode-rectifier, a 470uf @ 16v cap, then fed that 7.5vdc into a 7805 (3-pin 5vdc regulator) - that gave me (**CLEAN**) +2.5vdc, which I then ran into a resistor voltage-divider, using a pair of 30K resistors - result?... +1.7vdc to the BFO which makes it run with good stability, and no batteries. (the BFO is switched on & off by a chassis-mounted switch on the front). NOTE: the BFO p/s is mounted by it's input AC feeder legs, the BFO by a standoff, screwed onto one of the (radio) I.F. can mounting studs.

Now, how to power the Converter up? The converter filament-string requires 6.3 vac, so it's connected to the dial-lamp terminals (which are the same voltage)... and, as was the custom with these converters, "borrowed" the HV from a tube's plate circuit, dropping it down to +150vdc through a 4.7K 2w resistor. Interestingly enough, it has a *"radio-phono"* control, which switches audio inputs, and interrupts the screen voltage to the IF strip, so it works great as a "receive-standby" switch. (it doesn't kill the B+, but it does silence the audio).

I might add that the Main Tuning has now become the "IF Shift" control, as you can slide off to either side of the incoming 1.43 mc converter signal, to *imitate* a sharpening filter.

You would NOT believe how well it works! Yeah, it drifts a bit, but listening to the guys on 3.875 AM this morning, and 3.920 LSB this evening, was a total hoot. Using the HB BFO, I copy SSB and CW quite well. Listened to quite a bit of DX on 20m, using CW this morning.

I'm gonna stick it in a box, with the converter on top, and there will be my "Novice Receiver" for the cost of only the 6SK7 (RF amp) I had to replace, a junk-box *el cheapo* transistor, some surplus vector board, salvaged: caps, I.F. Can, 7805 regulator, 2-posit rotary switch & resistors..... now THAT is REAL ham radio. Heck, I might just use it for Straight Key Night, this year.

Tom

***The jack was bought from BA, back in about 1972, and had never been used - it was called a "Motorola Jack" *(the Gonset converters used the Motorola plug on the output cable, as it plugged into*

your car radio, and your car-radio antenna plugged into the converter, along with your ham-antenna... usually a BIG Webster Band Spanner) Typically, one used the filament & plate voltage FROM the car-radio.

The reason for mounting the Motorola jack on the chassis, was for shielding - see, we have an AM station here in Denver on 1430 kcs (KEZW), and that's the IF output freq of the Gonset converters, as previously mentioned, so it prevents much of the off-air "broadcast" signal from getting into the "radio" part.

(*) Us "senior" types remember when 11m was a HAM BAND.

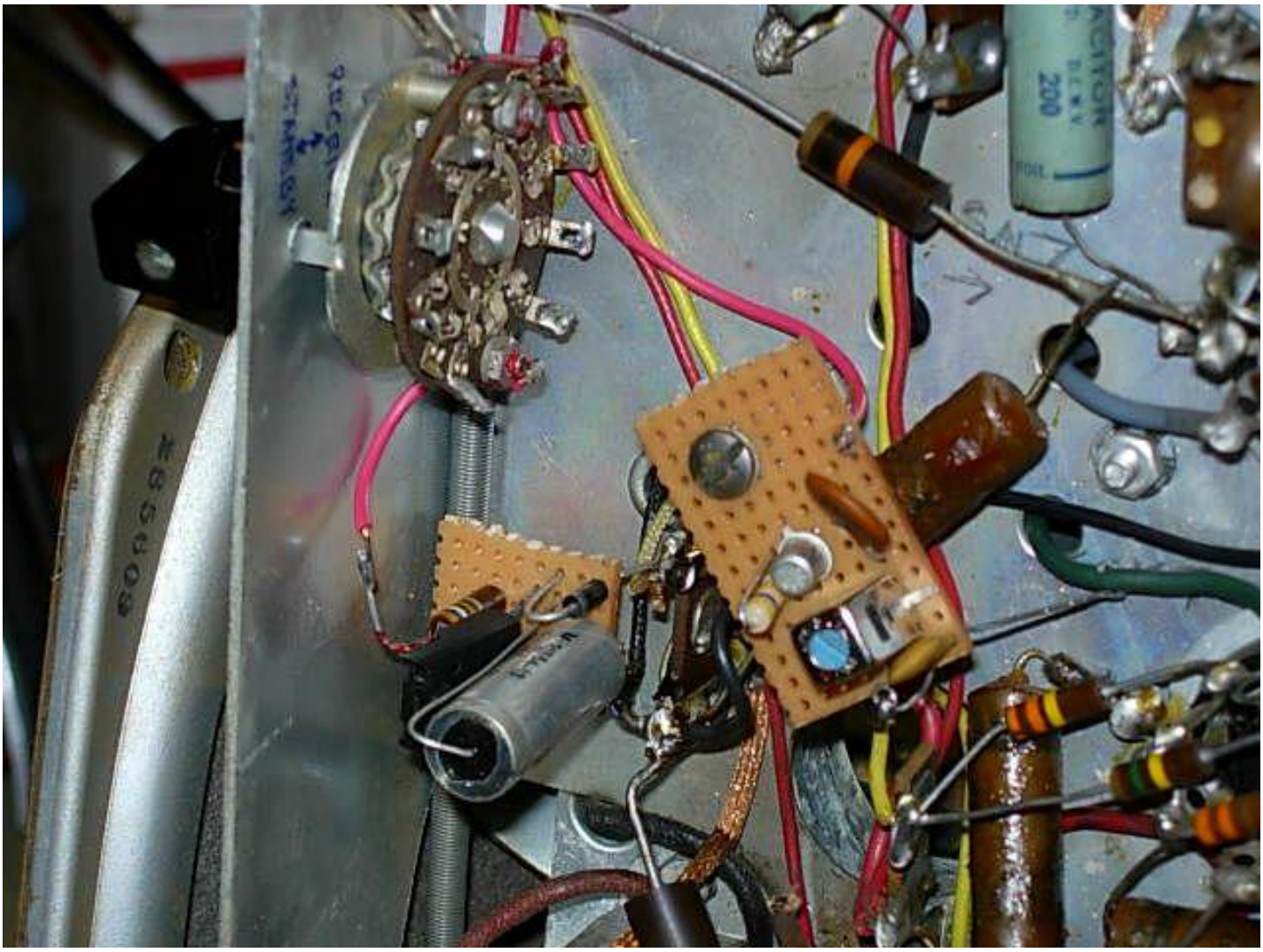
* * *

This is the GONSET “Super Six” converter; 80, 40, 20, 15, 11, & 10 meters (AM only). Required 6.3vac & 90-160vdc for operation – output on 1430 kcs. (kHz). The small white pointer in the background of the dial is the “preselector” indicator, and must match the band selected. The “antenna” trim control matches the input impedance to the antenna impedance... the Hi-Z and Lo-Z input switch is on the back, along with a 1430kc trap.

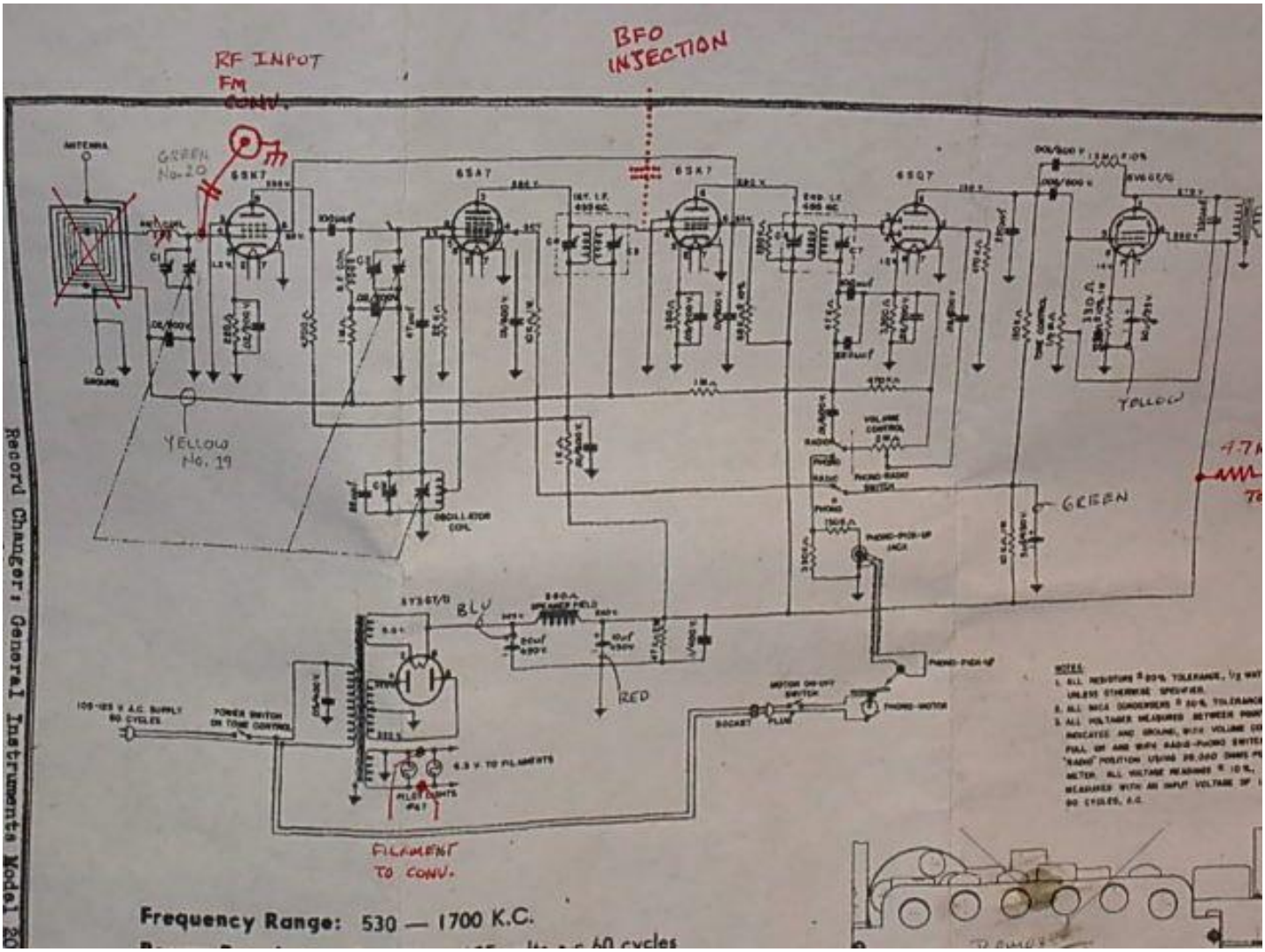
This is the “Super Six”, listening to the Kansas Weather Net on 3920 kcs (SSB!!!) Actually, the 40m portion is a nice bright green, in real life.

This is the dial, showing 3875 kcs – an unofficial AM net is found here in the early mornings (0630 mountain time), and about 1630 MST/MDT. Reception is great with a 135 foot long-wire, through an “L” network “tuner”

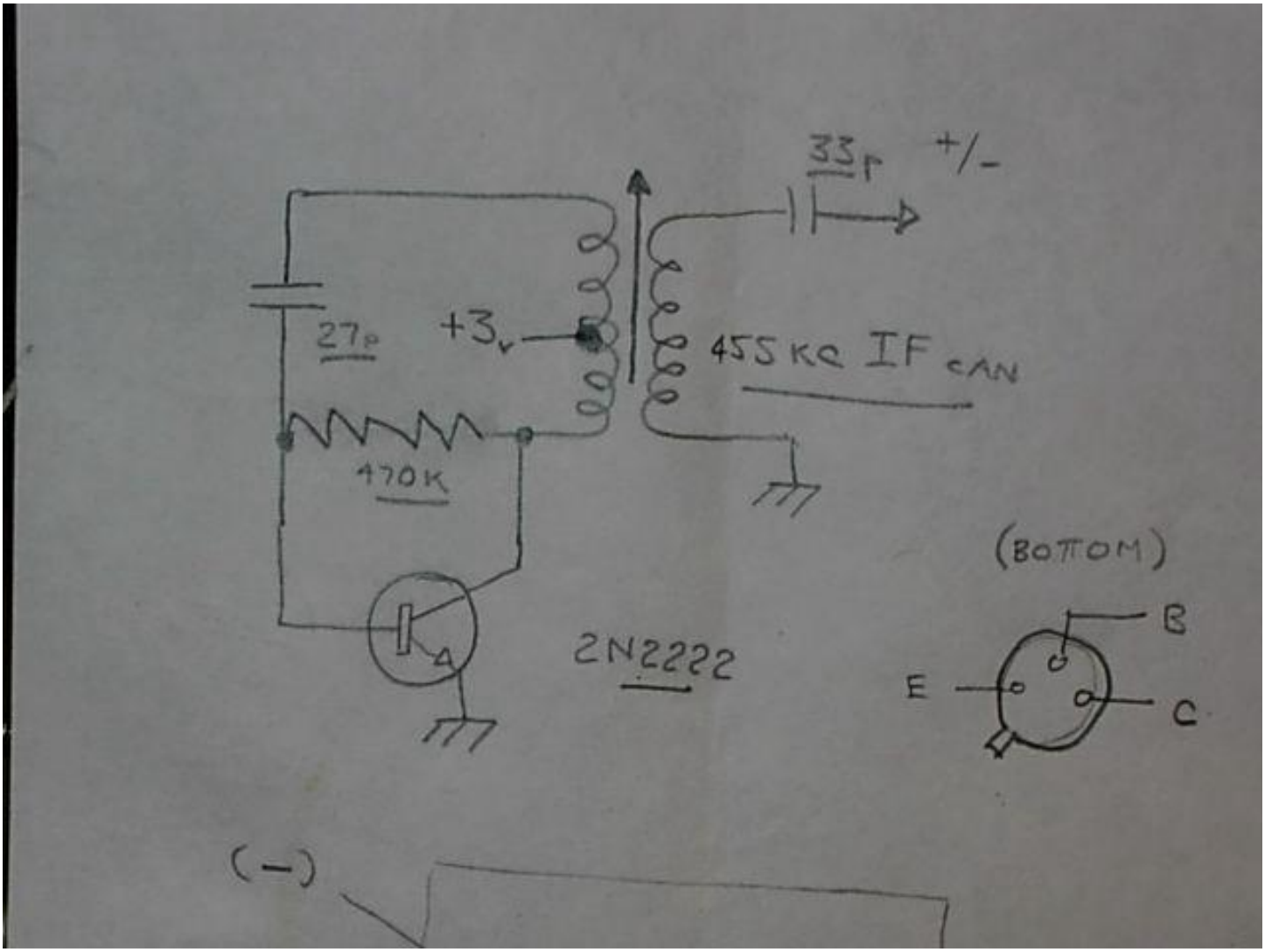
Upper Left – AM/CW-SSB switch (essentially, switches power to the BFO, from it's power supply). The power supply (Lower Left), fed from the 6.3vac filament voltage terminals, supplies +1.7vdc (regulated) to the BFO, which is on the right (held onto standoff stud by screw)



The schematic to the radio/amplifier portion of the 1949 radio/phonograph. Connection points and modifications are shown in RED. (BFO injection is accomplished by wrapping the output wire from the BFO board, AROUND the output wire from the first I.F. can). I may go ahead and replace the 5Y3 tube rectifier, as it's filament draws 2 amps @ 5 vac. – it's removal would reduce heat, considerably.



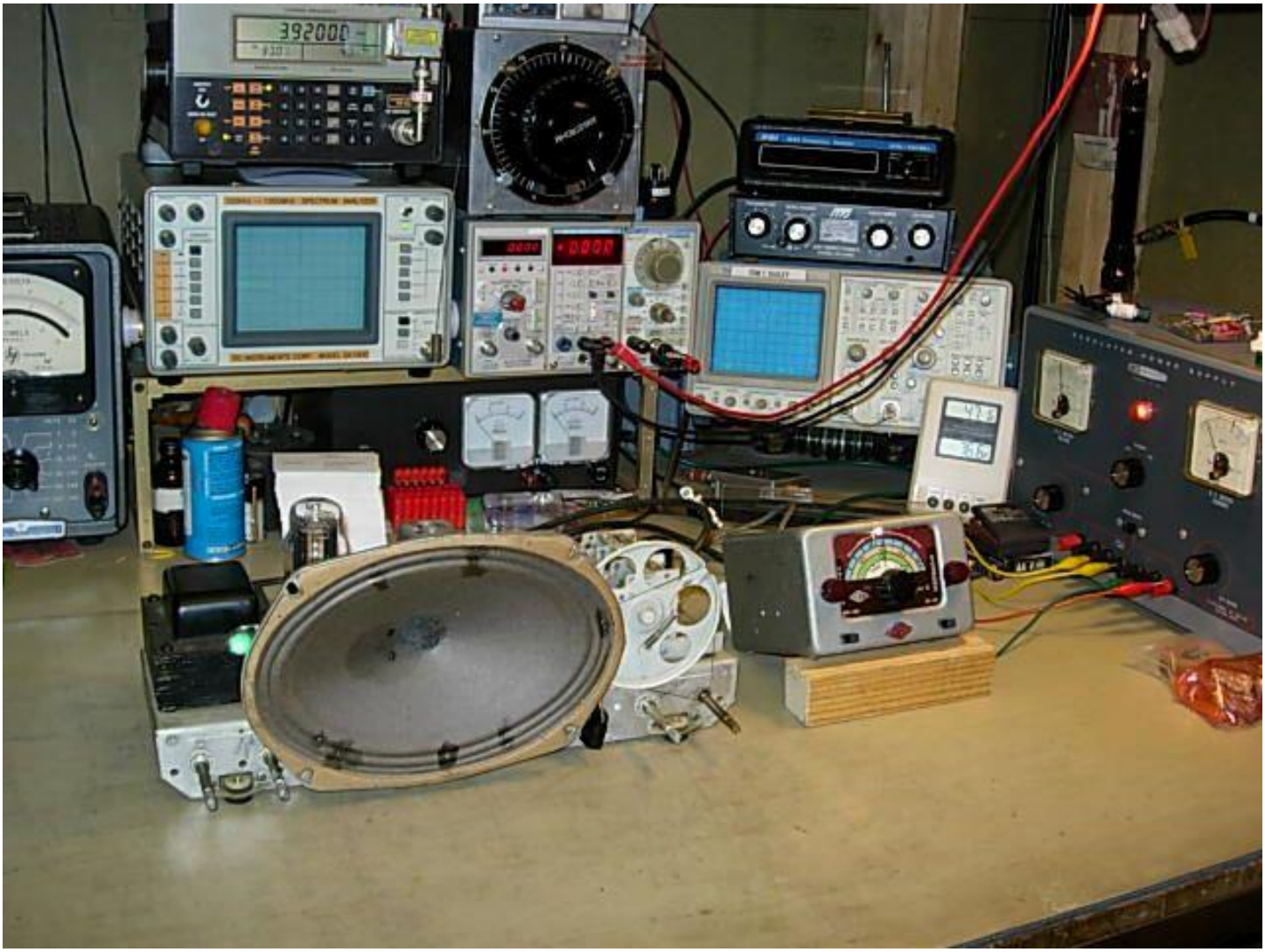
This is the schematic for the simple Beat Frequency Oscillator (455 kcs +/-). Best built in “dead bug” configuration on anything you might have lying about. The output cap was arbitrarily chosen – it’s value is NOT critical in any way. After “warmup”, adjust to zero-beat with a NON METALLIC tool.



This is the radio, as removed from the original wood cabinet. The output from the converter plugs into the Motorola jack on the RIGHT, just behind the tuning capacitor wheel. You can see how the dial cord ONLY wraps around the tuning shaft AND the tuning capacitor wheel – the dial plate and hardware was removed and discarded. Oh, and I did realign the IF sections on the radio – after 60 years, they had "seasoned" a bit. I decided to keep the ORIGINAL "electrodynamic" speaker, as it's "magnet coil" is also the filter-choke for the radio's power supply. The BFO switch is under the lower-right corner of the speaker.

Tom, is that a 80 rectifier tube? Orlan

This is the mad scientist's shop (at least the stuff you can see). In this picture, the filament & plate voltages were being supplied by the Heathkit HV bench power supply. It's listening to the Ks. Sideband net; the calibration having been checked with the Marconi 2022C digital-input signal generator... (that's why it says 3.920000 on the dial) In the far-right corner, is a picture of my Uncle William (SK) who inspired me to a lifetime vocation in electronics. I still have the galena crystal he gave me, when I was 8 years old.



Thank you Tom for inviting us into your shop and letting us look over your shoulder. Orlan