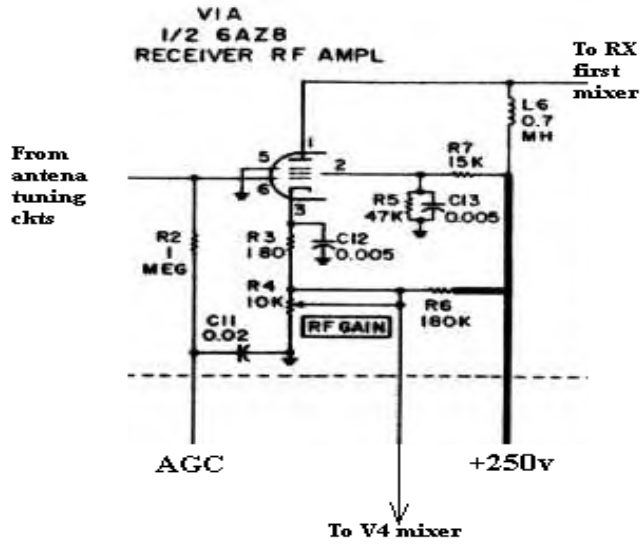
SR SERIES HF TRANSCEIVER RX GAIN ANOMALY

I had a particularly troublesome SR-150 in the shop. No matter what I did I could not get the gain up to norm. The spec states that a 1.5uv sig at the antenna shall produce 500mw or better audio output. However the norm for the SR series receivers is 500mw or better with 0.5uv or less at the antenna. This particular rig made spec but required 0.8uv to get 500mw output. If everything else had been in spec I would probably have sent the rig on its merry way. However the AGC figure of merit did not come close to spec. And this usually indicates loss of gain in the front end of a receiver.

I ended up at the RX RF amp V1.



Note the RF GAIN control also controls the gain of the second RX mixer V4.

When the RF GAIN is at max (fully cw) the wiper is at ground. However, when I measured the voltage at the tie point of R3 and R4 there was 0.7 volts present. When I measured the resistance from that tie point to gnd with the pot at max I got 970 ohms. So with the pot at max gain I put a clip lead from the tie-point to gnd and powered back up. I was pleased to find that I then had 500mw audio output with 0.4uv in. The AGC figure of merit, spec is 50db, is now 65db. I have a complete set of SR HF rigs and a few spares. And, since the RF GAIN ckt is virtually the same for the entire SR series I tested one of each, SR-160, 400, 500, 2000. Every one of them showed some improvement when wiper arm of the RF GAIN pot was grounded. One was minimal around 1db, the SR-500. The Cyclone II improvement was 9db. The rest were around 3 to 4db.

Interesting side note: In testing these rigs I found that several had 25k elements in stead of the 10k called out. This does not effect the operation but I thought I should mention it.

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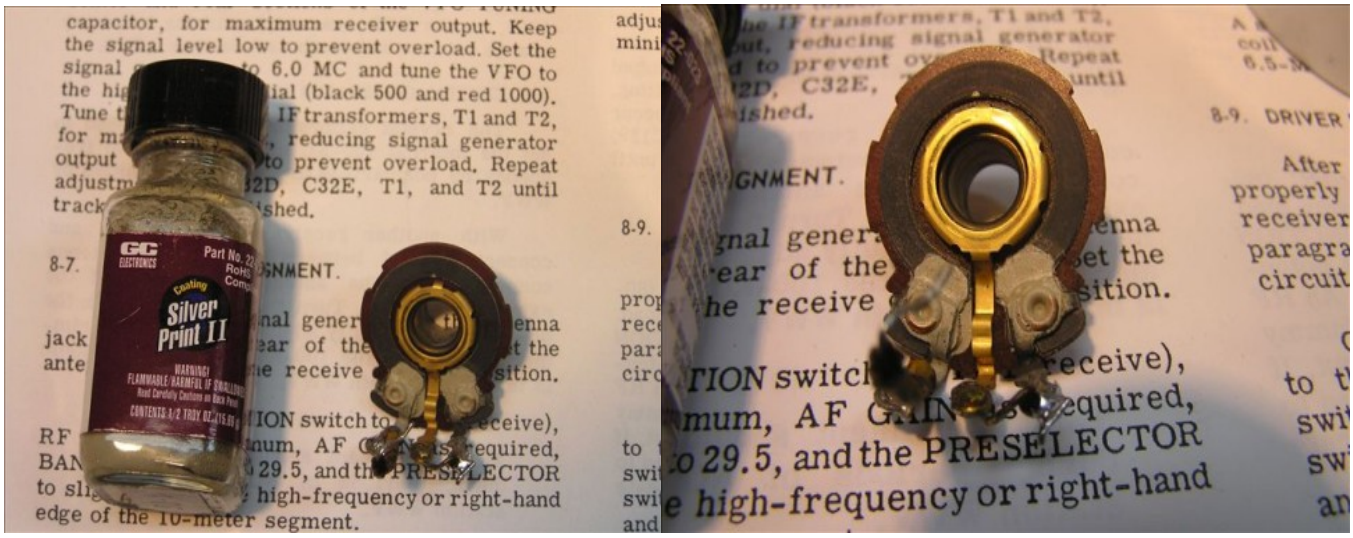
Now it's back to the initial SR-150. I pulled the control, a rather fun chore. Got on the internet and found that 10kX500K ganged controls aren't readily available. So I disassembled the pot and painted the landing area for the wiper at both ends of the pot with three thin coats silver paint. The paint is a product developed to repair printed circuit traces. I re-assembled the pot and retested the rig and what a pleasant surprise. Prior to the pot repair it took 0.8uv to get 500mw of audio output, now it is 0.4uv. The AGC hit linearity at 25uv before, now it hits linearity at 3.5uv. The AGC figure of merit holds to 65db over 5uv (spec is 50db over).



I believe the construction of the pot precludes any of the controls from reaching ideal 0 ohms and that the vast majority of rigs would benefit from some type of corrective action.

I bought my ½ troy oz bottle of silver paint about 5 years ago for $22.00. That same bottle now goes for $42.00. The GC part # is 22-023 and is RoHS compliant. There is a MG SILVER PRINT CONDUCTIVE PEN product available for $22.95. I have not used this pen but it should be quite similar. If all else fails then BING "SILVER CONDUCTIVE PAINT".

Regards, Walt WD0GOF